Peer Mentored Teams to Support Undergraduate Group Work in Higher Education

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Abstract

This research starts with a set of practical research questions to investigate a problem which occurs in some computing undergraduate modules that use group work as part of the learning and assessment strategy. In this study final year students with experience in information systems project work and trained in team processes met with small groups of first year computing students with the aim of turning the first year project group into a team. This study seeks to explore the experience of the final year students as they take on the role of peer tutor looking at the problems they perceive within the first year teams and the skills and knowledge they use to help them.

The study includes the recruitment and training of final year students (n=9) and allocation to first year teams. The final year students acted as co-researchers and team leaders in L4 Information Systems project work and recorded their thoughts and observations in a diary during the first semester of 2008/9 academic year. Diary data was supplemented by interview data from a sample of final year students (n=4). The sample was selected based on the richness of the data provided in the diaries and the number of meetings held with their teams. Rich data and thick descriptions were essential for a phenomenological examination of the experience of the final year students.

A number of findings emerged. A critical approach to analysis revealed ongoing conflicts occurred across cultural divides within the first year teams that final year leaders did not articulate or appear fully aware of. This had important implications for individual team members. Other findings which relate to issues of changing levels of motivation in the teams over the ten weeks, roles adopted by the leaders, ability to systematize the project or team processes and the ability to reflect on unsuccessful strategies also had implications for peer mentoring training and support.

The picture that emerged from the data suggested that lack of intercultural sensitivity and empathy within the student group reduces the value of peer mentoring interventions for some first year undergraduate team members in computing. In order to improve the experience for all students, methods to develop intercultural sensitivity within the student body are examined and a framework for training and support is proposed.

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Of course this research would not have been possible without the nine peer leaders and the forty two team members. Names have been changed throughout the thesis, but they all hold a special place in my affections and I have been amazed by the abilities they have demonstrated as peer leaders and the commitment they showed throughout the research.

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1 Chapter 1: Introduction

This research starts with a set of practical research questions which are set out in Figure 1, p3 to investigate a problem which occurs in some computing undergraduate modules that use group work as part of the learning and assessment strategy. In this study final year students with experience in information systems project work and trained in team processes, will meet with small groups of first year computing students with the aim of turning the first year project group into a team. This study seeks to explore the experience of the final year students as they take on the role of peer tutor looking at the problems they perceive within the first year teams and the skills and knowledge they use to help them.

1.1 Problem Area

The focus for this study has been prompted by the continued emphasis on the teaching of employability skills within higher education curricula. I have a specific interest in the attitudes of computing students to the promotion of these initiatives, in particular the promotion of those skills that improve team or group working. The sort of skills that might be classed as employability skills are those skills that are outlined by Harvey et al (1997), Yorke and Knight (2003) and Brown and Drew (2005) which are seen to enhance a graduate's ability to contribute positively and at an early stage to their area of employment. These are also referred to as professional skills (Shuman et al, 2005), and generic skills (Bennett et al, 2000). However despite the continued emphasis on these skills, research published by Mason et al (2003) and Cranmer (2006) suggests that there is little evidence to suggest that the teaching of employability skills by academics does improve the employability of graduates. However, studying on a sandwich course and having a placement doing work relevant to the course of study had a large, positive and significant effect on employability in the first six months after graduating (Mason et al, 2003).

Mason et al (2003) make a number of interesting comments about the attitudes of computing students towards the acquisition of generic or 'employability skills'. Mason et al noted that computing students were resistant to employability initiatives and believed that this was because in 2001 when the data was being collected, it was relatively easy for computing students to gain employment in the computing sector.

This was also the situation at the start of my study in 2006. A buoyant job market may have led to continued resistance from computing students towards the acquisition of employability skills. However, in the light of the changing graduate recruitment market of more recent times, resistance to the acquisition of such skills may disadvantage computing graduates as they compete for general graduate employment. Overcoming such resistance may help undergraduates compete successfully for placement opportunities, which has been shown to improve employability (Mason et al, 2003).

Looking at graduates from all of the degree disciplines surveyed by Mason et al, 90% of them had been given training by their employers in the past 12 months, 75% of this was geared towards the demands of their departments rather than generic or employability training. A third of the graduates received formal training in presentation/communication skills from their employer. There was no mention of training for working in teams although job requirements

routinely ask for this skill and employers rate this skill as being more valuable than the graduates tend to rate it.

Looking specifically at computing graduates 60% had been required to do project work as part of a group or team as an undergraduate. However there was no indication as to whether group work skills were actually being taught. Employability of computing graduates is certainly on the agenda of the Information and Computer Sciences Higher Education Academy with the 2011 conference focussing on employability with a specific call for papers on teamwork (ICS Events, 2010).

Kozlowski and Ilgen (2007) believe that team working skills can be taught, but rarely are. It is common, they say for educators to organize assignments around group work, with little or no attention being placed on the team process. This has led me to an examination of what happens in undergraduate group work project teams.

In 2006/7 a number of first year computing degree students at Sheffield Hallam University, studying a level 4[1] (L4) information systems[2] (IS) module, which required collaboration to complete a complicated case study based group project, complained to tutors about group work and about group members. In one instance module tutors were involved in mediating meetings between group members which allowed the project to be completed, in other instances project groups fragmented during the semester and L4 students appeared to be struggling with this way of working. Similar problems were observed in other modules. Although the information systems (IS) module leaders had devised appropriate project work and assessment practices some students did not seem to be developing the process skills required to manage and participate in group projects. This was investigated further by surveying the module cohort as preliminary work for this study and was assessed as part of the doctorate in education (Cinderey L. , Researching Professional Practice, 2007).

The analysis of the above survey suggested that perceived skill development was low[3] and dissatisfaction with group work was high within the group of L4 respondents. These data were gathered using an online survey developed from a focus group of level 5 students. The survey asked L4 students to rate their perceived skill development over a number of skill areas including team leadership, communication, negotiation and conflict resolution. The survey also included text boxes to allow for additional comments. Half the respondents posted negative comments about group work in the free text section. This was sufficient to suggest that a closer investigation into what happens in L4 student teams was justified. The results of the skills development section for the 2006/7 cohort can be seen in appendix A.

To try to improve this situation I initiated a peer tutoring intervention for the 2008/9 BSc Computing cohort in which level 6 (L6) computing students supported L4 student teams. An examination of the experience of the L6 peer tutors and the changes in perceived skill development of the L4 team members is the basis for this thesis. The next section looks at the

[1] Levels 4,5 and 6 refer to the levels of study in the first, second and final year of a UK first degree

[2] Information Systems in the context of this study is a L4 module that covers the analysis and design of systems to improve the business processes of a company. The L4 project is an application of IS skills based on a case study.

[3] In the 2006/7 cohort only 12.5% of students felt they had improved their conflict resolution skills; 37.5% for negotiation skills; 42.5% for leadership skills and 55% for communication skills.

research questions which I hope to answer during the study of this peer tutoring intervention and the types of peer tutoring in use in HE.

1.2 Rationale and Research Questions

The original thrust for the research was to improve the L4 teamwork experience. However, to do this my study needed to explore what happens in the teams. This required research questions which examined the reports, observations and experiences of the L6 peer leaders. Figure 1 below presents the research questions and the remainder of the section explains how the research questions evolved. As this is a phenomenological study no prior weighting was given to the research questions.

Research Questions

What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders?

How do L6 student leaders apply prior knowledge when mentoring cross year peers? Prior knowledge includes technical knowledge and team process knowledge.

How/when do L6 student leaders seek new knowledge to solve perceived problems?

Will 'cross year, small team peer leading' produce a more favourable self assessment of skill development relative to the comparison group from 2006/7?

Figure 1 The research questions

Peer tutoring (often referred to as peer mentoring) is a very old practice and has appeared in many forms including the personalised system of instruction (PSI), reciprocal peer tutoring (RPT) and supplemental instruction (SI) (Topping, 1996). The role of the peer tutor varies from checking and testing (PSI) to modelling, advising and facilitating (SI). Peer tutoring programmes such as peer assisted learning (PAL) initiatives developed from the supplemental instruction programmes in the US have been adopted in a number of UK HEIs (Capstick et al, 2003). Within Sheffield Hallam University there are a number of existing mentoring schemes in teacher education and mathematics with plans for PAL pilot schemes in nursing (Pink, 2010). Each scheme has a slightly different focus and structure. One feature of some schemes has been the high number of volunteer mentors and the low number of mentees (Pink, 2010).

One earlier project similar to mine is a peer tutoring initiative at Nottingham Polytechnic (Saunders, 1992) where final year students supervised first year mechanical engineering and computing students working on projects in groups of 4-9 students with the aim of improving communication skills. The subjective feedback from the vast majority of tutors and tutees involved in the Nottingham initiative was positive although neither details of tutor training nor the type of project worked on by the tutees (collaborative or individual) are available in the evaluation by Saunders (1992). According to Topping's typology (1996) this form of peer tutoring would be classed as 'cross year, small group tutoring'.

Topping (1996) discusses the advantages and disadvantages of peer tutoring for the tutees and the tutors and concludes that cross year, small group tutoring can work well and achievement gains for the tutees can be as good as or better than faculty tutoring (Topping, 1996). Topping also provides evidence from studies that report an improvement in transferrable skills within

peer tutored cohorts. This second finding is relevant to my initiative as one of the anticipated outcomes is an improvement in the self reported development of team skills. Team skills that I am studying could be categorised as transferrable skills as they can be used in different contexts.

Using Topping's typology my study could be classed as 'cross year, small group tutoring'. However, I would reclassify it as 'cross year, small *team leading*' as it is aimed specifically at promoting collaborative working as a team. The peer tutors (referred to as level 6 leaders in this study) were asked to help turn a student (referred to as level 4 students) project group into a team. There was no formally agreed definition for teamwork or leadership. L6 leaders were allowed to interpret this but they were familiar with the idea of forming, storming, norming and performing (Tuckman, 1965) from their initial online training and were expected to help the L4 student teams through this process. The L6 leaders were also provided with details of the survey questions that would be completed by the L4 students at the end of the semester which ask about skill development. There was then no further reference to the survey. The L6 leaders were asked to hold up to ten meetings through the semester with their L4 group as they worked on a semester long assessed Information Systems project which required analysis and accurate documentation of a large and complicated system.

A number of studies provide supporting evidence that the use of peer leaders should promote better teamwork experiences and skills development. Studies from the area of student team leadership support the idea of improving team skills by using a trained designated leader (Markulis et al, 2006) and others provide evidence that more experienced students are considered more effective leaders by their peers (Duemer et al, 2004). Studies of student self-efficacy[4] have also shown that students are more likely to feel able to deal with conflict in teams when advised by peers rather than faculty members (Stone & Bailey, 2007). These studies provide additional evidence that my peer leader initiative should provide positive outcomes for the L4 students.

While the impact of peer tutoring on the L4 experience is important there is much supporting evidence to show that such interventions are effective therefore a more sustainable question is to consider what happens in peer tutored undergraduate teams and what skills L6 peer tutors need in order to improve the L4 teamwork. For that reason, my main interest is in the observations of the teams by the L6 leaders and experiences and skills/knowledge use of the L6 leaders as they mentor them. To do this I asked the L6 leaders in my study to record their experiences and also discuss their experience in follow up interviews. This leads to a restatement of my research questions and the main focus of the study.

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[4] In general, *self-efficacy* is the belief that one possesses the skills and abilities to successfully accomplish a specific task (Stone & Bailey, 2007). According to Bandura (1997, p3) *'People's beliefs in their self-efficacy have diverse effects. Such beliefs influence the courses of action people choose to pursue, how much effort they put forth in given endeavors, how long they will persevere in the face of obstacles and failures, their resilliance to adversity, whether their thought patterns are self-hindering or self-aiding, how much stress or depression they they experience in coping with taxing environmental demands, and the level of accomplishments they realize'*

- **What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders? Data collected using the blog template Appendix C and interview schedule Appendix D**
- **How do L6 student leaders apply prior knowledge when mentoring cross year peers? Prior knowledge includes technical knowledge and team process knowledge. Data collected using the blog template Appendix C (successful/unsuccessful application of skills or knowledge) and interview schedule Appendix D (where they would place themselves on a learning matrix).**
- **How/when do L6 student leaders seek new knowledge to solve perceived problems? Collected using the blog template Appendix C (preparation for next meeting) and interview schedule Appendix D (how they bridged learning gaps).**

This leads finally to one more area of enquiry which asks whether;

- **'cross year, small team peer leading' can produce a more favourable self assessment of skill development relative to the comparison group from 2006/7 as measured using the Group Work Survey developed in 2007 (Appendix A)?**

To support these research questions I have a number of objectives which have been presented as operational objectives specific to this study and general objectives;

Operational Objectives to support the study;

- to examine the group work environment by auditing the module group work project to ensure that it is appropriate as a group task;
- to equip the L6 co-researchers through training in team and leadership processes and research issues to support their data collection;
- to develop materials that will support this training;
- to present a picture of what happens in undergraduate group work under these particular circumstances;

General Objectives;

- to develop an approach to the thesis using an appropriate research methodology;
- to examine my role as a researcher in an interpretive research study;
- to develop an approach which is appropriate for data collection;
- to analyse the data in a way that is in line with the methodological approach;
- to develop new approaches, based on findings, to improve group work in higher education especially in computing courses

The next section gives a brief description of the university in which the research takes place and shows the relationship between the computing courses from which the research participants were selected.

1.3 Introduction to the research environment and the research participants

The piece of research presented in this thesis takes place in the faculty of Arts, Computing, Engineering and Science (ACES), using first year students (studying at level 4) from the BSC HON Computing route and final year students (studying at level 6) from BSC HON Computing, BSC HON Business Information Systems and BSC HON Computing (Software Engineering) which are some of the main computing courses on offer. These are all four year sandwich courses.

There are 1060 students (NSS Student Breakdown, 2009) enrolled on computing related courses in the faculty of ACES, 80% of these are full time, 66% of students are studying on undergraduate degree courses, 7% are studying other undergraduate qualifications such as Foundation Degrees and level 3 preparatory courses for students' who have not reached the requirements for entry onto degree courses. 5% of computing students are overseas students (from outside the UK and EU) and 10% of the students on the full time first degree computing courses are women (NSS Student Breakdown, 2009). These students will all be asked to complete group projects at various times throughout their studies.

The computing routes from which the nine L6 leaders and forty two L4 participants were recruited have a number of L4 modules in common in the first year. These include professionalism and communication, information systems and mathematics for computing. So although the L6 leaders are not all BSC HON Computing students, they are studying on related computing courses and had similar study plans at level 4 to the current L4 students. The L6 leaders will be introduced in more detail in chapter 5.

1.4 Summary

This research therefore starts with a set of practical research questions to investigate a problem with group work which occurs in some computing undergraduate teams in a large post 1992 university. In this study L6 students with experience in information systems project work will meet with small groups of L4 computing students with the aim of turning the group into a team.

In chapter two I will review the literature that relates to undergraduate team and group work best practice. In chapter three I will describe the methodological approach that underpins my research. In chapter four I will provide the details of the data collection methods. In chapter five I will present the analysis, findings and implications for practice which relate to the four research questions along with the unexpected findings which emerged due to the chosen methodological approach. In chapter six I will summarise the implications for practice and in chapter seven, the conclusion I will evaluate the strengths of my chosen methodological approach with respect to the research outcomes.

2 Chapter 2: Literature Review of Student Teamwork and Best Practice

2.1 Introduction

This chapter relates to my research in three ways. Firstly it presents a summary of justifications or reasons for the use of group work within undergraduate degree courses. Secondly it maps out some of the recent research and shows the difference between my study and much of the research into group work in H.E. taking place in the UK and US.

The research question referring to L4 student's self assessment of skill development is dealt with using survey methods similar to those used in a number of research projects examined in this chapter, but by choosing a phenomenological and critical approach to studying group work (see Chapter 3), I have used a different methodology for the main research questions to many of the evaluative research projects shown here(Figure 1 The research questions, p3). To show the positioning of my research within the research domain I have used a conceptual diagram developed by Gunter and Ribbins (2003) in section 2.3.11 which categorises knowledge domains as conceptual, descriptive, humanist, critical, evaluative and instrumental. Although research studies will in general be working across a number of these knowledge domains, I have attempted to identify the main focus of each study and map that onto the conceptual diagram.

Finally it shows that the Information System project task and structure follows many recommendations for good practice based on the McGrath (1964)team effectiveness model. This is an important ethical consideration – the L6 leaders are not being put into a project that generates conflict because of the structure of the task or type of task. The input factors for the project in my study are evaluated against a framework for good practice. Some of the recommendations for good practice are critiqued.

Despite thoughtful construction of the IS project task, problems had arisen in the 2006/7 cohort. One of the recommendations for good practice is to appoint a group coach who can facilitate the L4 small groups (Bryant & Albring, 2006). To resource this using faculty members is increasingly difficult. My study hopes to determine whether L6 peer leaders have the skills to fulfil the role of group coach and to examine what happens in the teams as they attempt to do this.

2.2 Reasons for group work

This first section presents definitions for group and teamwork, a summary of the main justifications for the use of student group work found in recent research literature and goes on to map the areas of research onto a knowledge domain framework adapted from Gunter & Ribbins (2003). The literature review was conducted at a time when higher education teaching staff members in Sheffield Hallam University (SHU) were being asked how modules were developing employability and learning skills for undergraduates. SHU emphasises and encourages such skill development through the two institutional Centres for Excellence in Teaching and Learning (CETLs) in learner autonomy and employability. Group work or teamwork is sometimes proposed as a vehicle for developing some of these skills (Yorke & Knight, 2003). I will start this examination of the literature by defining group and teamwork.

2.2.1 Definitions

The terms teamwork and group work are often used interchangeably. The student participants in this research have in the past received project briefs using either term. Bryant and Albring (2006) offer definitions for a group;

> *"a collection of two or more interacting individuals with a stable pattern of relationships between them who share common goals and who perceive themselves as being a group" (Bryant & Albring, 2006, p. 242)*

And a team which is similar but with the addition of complementary skills and mutual accountability;

> *"a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable" (Bryant & Albring, 2006, p. 242)*

Prichard et al (2006)reviewed a number of definitions for teamwork which included the following attributes; a common goal, member interdependency, dynamic exchange of information, co-ordination of task activities, some structuring of member roles. They note that teamwork definitions are similar to collaborative learning definitions. My view is that as educators we are trying to foster the kind of mutual accountability and collaboration between students which would be typical of teamwork (and collaborative learning) even though the term group work is often used in module documentation and assessment briefs.

The L6 leaders in my study have been briefed to turn the L4 student groups into teams. For these reasons I have reviewed teamwork literature rather than group work literature. The use of teamwork for skill development as well as the alleviation of budgeting and resourcing issues for HE teaching is presented below.

2.2.2 Teamwork studies

A review of recent research shows the emphasis placed on the development of teamwork skills. The use of undergraduate teamwork within HE is justified in a number of ways; a method to satisfy the requirements of professional bodies for graduates with teamwork skills (Bryant & Albring, 2006; Bramhall et al, 2005); a method to satisfy the requirements of employers for graduates with teamwork skills (Brandyberry & Bakke, 2006; DeShon et al, 2004; Dunne, 2000; Ellis et al, 2005); as a vehicle for learning (Bramhall & Radley, 2007; Baer, 2003; Dunne, 2000); and as a response to tightening higher education budgets, leading to higher student: staff ratios and reduced resources for assessing large scale individual projects (Brandyberry & Bakke, 2006; Dunne, 2000).

The main justification for undergraduate teamwork in these papers is that teamwork skills are required by professional bodies and employers. The students in my research are all studying on courses that are recognised by the professional body for computing in the UK, The British Computer Society (BCS) and are encouraged to develop the soft skills associated with professional practice.

Less emphasis is placed on any benefit to project quality of using teams (Dunne, 2000). I will therefore not make any claims for the benefits of teamwork[5] in this section but will look at the areas of research that relate to teamwork in higher education.

The following section shows the distribution of student team and group work research according to the 'type of knowledge' being researched. Afterwards I show where my research fits into this map of knowledge types. Having explained the positioning of my research I then relate the teamwork literature to the real life teamwork project in which this piece of research takes place to ascertain its suitability as a vehicle for research by comparing it to the McGrath group effectiveness model.

2.3 Mapping the research study

Owing to the large body of literature that has developed since group process research experiments started in the 1930s by researchers such as Sherif (1936), I required a search strategy to focus my literature review. My aim was to find out what happens in student groups when they try to work in small project teams, so my initial searches were to determine which research studies were focussing on student group or teamwork in higher education, the typical methodologies in use, what outcomes if any were being measured, and what is considered to be good practice for facilitating undergraduate group work.

Identifying good practice, and ensuring that a group project is appropriate, is important in the setting up of this research because asking students to collaborate on a task that is inappropriate for teamwork would invalidate the research. My intention is not to engineer dissatisfaction. Therefore in the first phase of literature review I looked for published research about student teamwork. I excluded research into sports teams and research into small groups in schools as the context is too far removed from that of group work in higher education.

The main student teamwork areas of research that emerged from this initial review include; team building; team skills training; dealing with negative behaviours; student satisfaction with teamwork; student team leadership; objective measures of team performance and recommendations for good practice as well as examining the context, research approaches and length of study. This has enabled me to position my research relative to other studies, which shows that it is situated in an area that is less studied. These areas of research are described below.

2.3.1 Team building

Team building training interventions included Bramhall et al (2005) who present a methodology for team building along with positive staff and student evaluations for a residential team leadership course; Dunne (2000) who described a BP sponsored programme involving ten institutions with positive feedback from staff and students and Hughes, Rosenbach, & Clover (1983) who demonstrated how team building positively affects team climate and performance in a US Air force squadron. How team building interventions impact on team development is relevant to my study as the L6 leaders will be trying to encourage

[5] There is a large body of research which considers the benefits or deficits of group work. Benefits include solving the missionary/cannibal puzzle where three groups were successful, but no individuals succeeded (Shaw M. E., 1932, p. 492); 26 groups out of 30 pulled above their potential productivity – 'social labouring' (Holt, 1987). Deficits (actual productivity falls short of potential productivity due to process losses) are described by (Steiner, 1972, p. 9).

team building in the early stages of the peer leading intervention. These studies report some positive outcomes.

2.3.2 Team skills training

Research into team skills training showed positive effects from team skills training for a student group based project (Prichard et al, 2006), and positive effects measured in a lab based simulation for students trained in team skills (Ellis et al, 2005). The effect of team skills training is relevant to my study as the L6 leaders will be participating in online and face to face training prior to the start of the peer leading intervention.

2.3.3 Negative team behaviours

Research into dealing with negative team behaviours showed that vicarious team experience and team member support by peers significantly affected team conflict self-efficacy (Stone & Bailey, 2007). This research is relevant to my study as peer support may enable the L4 students to improve conflict resolution skills. Other approaches to dealing with negative team behaviour include the implementation a technology based solution to the issue of social loafing and free-riding using an activity log and online peer review (Brandyberry & Bakke, 2006). In a very different study Tonso (2006) describes the effect of respectful and disrespectful interactions between students in group projects on project outcomes with recommendations for improvement. Jalajas & Sutton (1984)describe the positions taken by team members in feuding groups and offer coping strategies for students.

2.3.4 Team performance - subjective measures

Subjective measures of team performance are numerous e.g. student satisfaction with teamwork where Napier & Johnson (2007) employ a survey to determine the factors which affect student teamwork satisfaction and showed that students in high collaboration teams reported greater satisfaction. Other studies describe the use of surveys to collect recommendations on how to improve group work for students (Payne, Monk-Turner, Smith, & Sumter, 2006); the comparison of student perceptions of team performance with those predicted by teamwork knowledge, skills and abilities tests (Miller, 2001) and the production of an evaluative 'critique' of the team building intervention by participants (Hughes, Rosenbach, & Clover, 1983).

2.3.5 Team leadership

Some researchers looking into student team leadership used designated leaders and rotating leadership to improve student team functioning (Markulis et al, 2006). Another study collected opinions from post graduate team members as to what constituted a good student group leader and concluded that prior experience of the leader was valued by team members (Duemer et al, 2004). This research is relevant to my study as the L6 leaders will satisfy both of these criteria as they are designated leaders of the teams and they have substantially more experience in student teamwork than the L4 students.

2.3.6 Team performance - objective measures

Studies of objective measures of student team performance were less common e.g. team scores. However researchers who attempted to measure this attribute include Ellis et al (2005) who measured the success rate of teams in intercepting threats on a radar simulation; Miller (2001) who used student project grades as a measure of team effectiveness and Hughes, Rosenbach, & Clover (1983) who compared the academic and athletic performance of the

participating squadron with a control group and found a significant improvement in athletic performance for the squadron that had participated in a team building intervention. Whilst this research is interesting it is less relevant to my study as I am not able to control the study in a way that would allow for a meaningful comparison of objective outcomes such as the project grade.

2.3.7 Team work set-up

Bryant & Albring (2006) make recommendations for setting up, supporting and assessing group work based on a number of conceptual frameworks. These recommendations are examined in detail later in this chapter as they are directly relevant to my study.

Others use student surveys to recommend improvements based on student comments (Payne, Monk-Turner, Smith, & Sumter, 2006) or provide an extensive range of tools and approaches to support student teamwork (Levin, 2005), or demonstrate the impact on individual student grades after working in 'similar ability' groups which provides evidence that high and medium ability students benefit from such groups, whereas low ability students show no difference in mixed or homogenous teams (Baer, 2003).

2.3.8 Context

As well as having different foci, the context for the teamwork studies varies. Some researchers use students because they are readily available research participants and allow for studies that cannot easily be conducted in the work place (Sauer et al, 2006; Ellis et al, 2005; DeShon et al, 2004). Other researchers investigate group or teamwork as part of learning, teaching or assessment requirements for a particular course (Stone & Bailey, 2007; Tonso, 2006; Prichard et al, 2006). This second approach relates more closely to my research as it examines the operation and experiences of team members within an authentic project – a project that has outcomes that contribute towards a grade or learning within a module of study and is therefore important to the student participants as the outcome impacts on them in a real and meaningful way. The context in which the research takes place has ethical implications which are discussed in section 3.7, p41. Ethical issues which relate to research using students working on projects that contribute to their assessed grade require careful consideration of the balance of power between the researcher and the researched.

2.3.9 Research tools

The vast majority of the research was survey based, often using Likert scale questions (Stone & Bailey, 2007), occasionally open text responses (Payne et al, 2006) using self reported data (Napier & Johnson, 2007). One quasi-field experiment (Hughes et al, 1983) used pre-coded surveys for data collection and examined the impact of a team building intervention on objective outcomes. Other student team interventions evaluated student satisfaction (Bramhall et al, 2005) (Dunne, 2000) rather than objective improvements. This seems to be a common approach for research that applies to learning, teaching or assessed student group work. The reason for the popularity of this approach might be due to institutional requirements to collect feedback from students about their study experience which would provide a large database of self reported data to draw upon. A much smaller number of studies used observation and objective outcomes measurements as research tools in lab based studies (Ellis et al, 2005). These approaches are less relevant to my study as I will discuss in section 2.3.11 p13.

2.3.10 Length of study

There were a small number of researchers conducting laboratory experiments based on simulations (Sauer et al, 2006; Ellis et al, 2005; DeShon et al, 2004) which used short lived teams to complete tasks over a few hours. These research studies are not as relevant to my research as the context and duration are different. However, one piece of research which studied teamwork, in context, over a number of months, using a participant observation methodology was that of Tonso (2006) who studied two small teams in great depth. Of the few researchers that studied the group interactions as they occurred (Ellis et al, 2005; Tonso, 2006) only Tonso was working with a real-life team over a prolonged time period. Tonso's research is therefore closer in context and length of study to my research than the majority of research studies, but differs slightly in approach with Tonso using participant observation whereas I will be using L6 observers.

And so in summary the overwhelming majority of papers discussed so far are large scale quantitative pieces designed to test a number of hypotheses from survey data. A smaller number collect qualitative data, again from surveys in an attempt to express the student experience. Only one study presented the student experience from participant observations and presented the ongoing team member interactions to the reader. As there are a range of research methods and outcomes represented in the reviewed literature, I have categorised these research papers into different knowledge types using a framework developed by Gunter & Ribbins (2003) to show the concentration of research into the conceptual, descriptive and evaluative knowledge domains, but with less research in the humanistic and critical knowledge domains (Figure 2). It is important to note that although many of the research studies collect subjective self report data, almost all of that is analysed in a quantitative manner and so has been categorised as evaluative knowledge. It is also worth noting that when recommendations for change, or criticism of current practice is included in the research, this tends to be at a micro-level with perhaps advice to module tutors, rather than an examination of the macro-level factors which operate at a societal or establishment level which is why little research has been categorised as critical knowledge.

2.3.11 Positioning my research

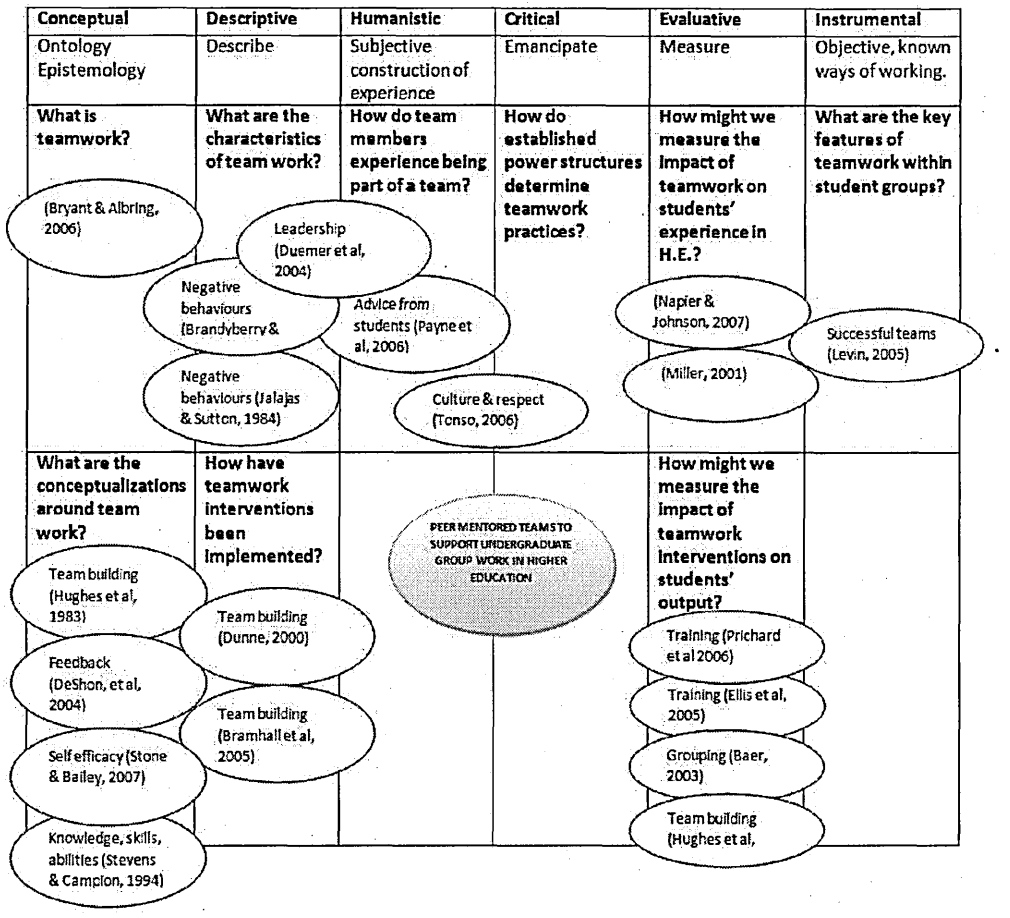

Figure 2 Teamwork research knowledge domains

As Figure 2 shows, research on student teams often falls into the conceptual, descriptive, evaluative and instrumental domains – but my research (Peer Mentored Teams to Support Undergraduate Group Work in Higher Education – the shaded ellipse on Figure 2) looks into the humanistic experience of teamwork using peer leaders as co-researchers leading to knowledge development in the critical knowledge domain. These domains appear to be studied less frequently perhaps because of the time and resources required to set up the research, collect the data and analyse the data compared to a survey approach. The humanist knowledge domain deals with questions such as how do students experience teamwork? What is happening on a day to day basis within these teams? How do L6 leaders experience leading L4 teams? This approach also allows knowledge from the critical domain to emerge, a domain which addresses questions such as how established power structures determine teamwork practices. My methodology and method are different to the majority of studies which have been reviewed in this section where surveys or laboratory observations were used as the main source of data. My 'observations' are being made in the field, but by level 6 students who have volunteered to lead the level 4 teams. The level 6 students are also active participants. This intervention has two functions; to allow the team processes to be observed and studied from the point of view of the L6 leaders, and to provide support for these processes (with the intention that it should provide as positive an experience as possible; I do not intend to engineer dissatisfaction). My research will examine what happens in peer supported student teams when L6 leaders attempt to turn L4 student groups into teams. It examines the phenomena as presented to, and experienced by, the L6 leaders.

In this section I have reviewed and mapped a selection of the recent research into student group and teamwork. I have described how my research differs in focus and methodology and positioned it in the humanist and critical knowledge domains of the map. The next section examines a proposal for good practice in student group work which looks at the factors that affect the experience of team members. The recommendations for good practice are evaluated and then applied to the L4 group project. This allows the research environment to be described and audited to ensure that the information systems module group project is a suitable research setting.

2.4 Good practice in teamwork - Auditing the information systems project

In this section I will examine the Semester 1 Information Systems (IS) module project and evaluate its appropriateness for a student project by comparing it to recommendations for good practice. The evaluation is based on a combination of the recommendations made by Bryant & Albring (2006) based on McGrath's model for group effectiveness along with other research which in some cases is used to critique Bryant & Albring's recommendations. The recommendations are divided into three sections; input factors, process factors and output factors that contribute to team effectiveness. The factors that I will use for the audit are the input factors which are split into individual, group and environmental-level factors.

2.4.1 Input factors to enable team effectiveness

This section examines the model proposed by J E McGrath in 1964 which is used by Bryant & Albring (2006) as a framework for their recommendations for creating effective teams. I have used the model to audit the IS module group work to ensure that the main input factors are satisfied to ensure that each student team has a good chance of success as a team. This is to ensure that the L6 student leaders are not being placed in teams where the individual, group and environmental factors might themselves result in a difficult working environment. The aim is to provide a positive teamwork environment in which the L6 leaders can support and encourage the L4 students through the group interaction process and report their observations.

The next section examines the model (Figure 3) proposed for creating effective teams and compares it with the actual group work environment in which my teams will be operating. Bryant & Albring (2006) use this model to structure their paper on 'best practice' for student teamwork and I will use the model to justify research decisions, explain any limitations which cannot be controlled, and critique the recommendations where appropriate based on other research. I will concentrate on the input factors section of the model which includes individual input factors, group-level factors, and environment-level factors and relate them to the Information Systems teamwork project to determine the suitability of the teamwork project for the proposed research intervention.

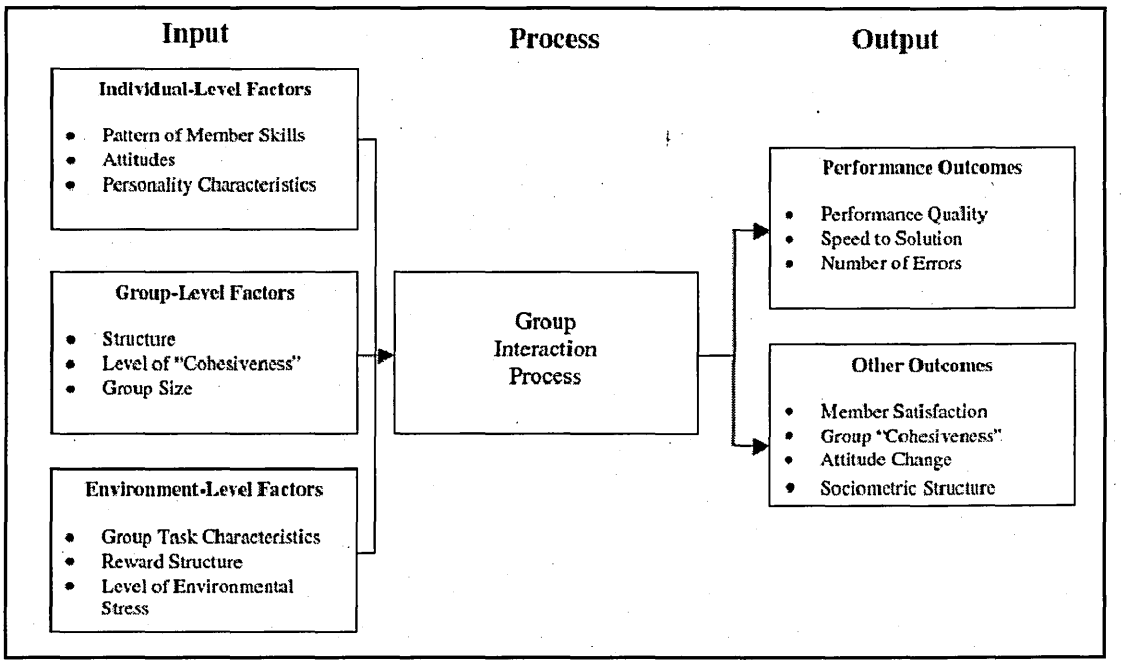

Figure 3 McGrath's model of group effectiveness as adapted in Bryant & Albring (2006)

In the next section I will start my examination with the individual-level factors from McGrath's model and in subsequent sections work through group and environment-level factors. At each level I will evaluate each set of factors and then relate the recommendations of Bryant and Albring to the Information Systems project before moving onto the next set of factors.

2.4.2 Individual-Level Factors

Individual-level factors in McGrath's model of group effectiveness, include the pattern of member skills, attitude and personality characteristics. In this section I will discuss the recommendations based on these factors and relate them to other student teamwork research. I will then look at how these factors relate to the Information Systems teamwork project.

The first individual-level factor is pattern of member skills, in other words how skilful are the students in the cohort? There are a number of ways of assessing the pattern of member skills with commercially available tests which assess technical or team skills (Stevens & Campion, 1994) or by simply using the marks or grades that show the prior attainment of students. Bryant & Albring (2006) recommend that once this information is available, student teams should be formed by dispersing the talent evenly across the teams to form diverse teams.

However, other researchers have recorded problems with conflict and other negative consequences that can occur when diverse teams are created. Napier & Johnson (2007) showed that conflict was higher in gender mixed groups and ethnically mixed groups, Tonso (2006) found that 'over achievers that go too far' can treat less academic team members badly, and Shaw (2004) noted that 'lone minorities' can be treated as scapegoats when the team is under pressure. In addition, positive outcomes have been observed when homogenous teams (teams where members have similar characteristics)are formed based on previous academic marks with high and middle performers achieving better marks in assessments after working in teams of similar students, and low performers achieving equally well as control groups (Baer, 2003).

The results of these studies suggest that the manipulation of team membership is more complex than Bryant and Albring suggest which leads me to believe that when purposefully engineering diverse teams, teaching staff need to be aware of the possible negative consequences and be available to support the teams if conflict starts to hinder team progress.

The second individual-level factor is attitude. When dealing with attitude as a variable, Bryant & Albring (2006) recommend that students with high and low preferences for group work should be dispersed amongst the groups because teams with a low average preference for group work appear to be less effective than groups with a high average preference for group work. However, we are not told how effectiveness is being measured and whether the apparent greater effectiveness in the mixed teams is due to social compensation[6] by those students who are more engaged with group work.

The third individual-level factor is personality. Personality, like team member skills, can also be assessed using commercially available packages such as the Belbin model and the Team Management System model (Bryant & Albring, 2006, p. 247). In the case of the students in my study, they are asked to complete an online Myers Brigg Type Indicator questionnaire, which provides them with one of sixteen personality types. Bryant & Albring (2006) suggest that although these tests, which are based on role theory, may be appropriate for large teams in the workplace, student teams are likely to be too small to accommodate the full range of roles/personality types.

The L4 students in my study are asked to consider the personality types that make up a good team. They then self-select the team members taking into consideration the MBTI personality types. What this effectively does is draw attention to the potential role of 'personality' to team processes, but personality is not used as a strict criterion for selecting teams, often because there is not a full range of types to select from within a tutorial group. I am concerned that by focussing on the role of personality when selecting groups, team members make fewer attempts to resolve conflict if they have fixed self theories (Yorke & Knight, 2006)and assume that it is not possible to change the team dynamics. However this is a practice that has been embedded into the group selection process for some years.

This section of the review shows that creating ideal teams and manipulating team membership is fraught with problems. Leaving students to form their own team is not seen as good practice (Levin, 2005) but equally problematic is the issue of randomly assigning students to teams by, for example, splitting a tutorial group into teams based on an alphabetically ordered attendance register. This random creation of teams may create 'lone minorities' within teams. At least with self-selected teams, team members are making some sort of commitment in responding to an invitation to join. Problems may occur with this approach if a student is not invited into any team. Within my research cohort this issue is handled by the Professionalism and Communication (P&C) module tutors who work on a parallel module which is linked to the Information Systems module. P&C tutors ask students to form teams for Information Systems and P&C module group assessments, taking into consideration their personality types. The tutors will then direct the teams to make changes if there are students who have not taken the MBTI, or have not already joined a team. This is done within the first two weeks of the

[6] Some team members working harder to compensate for a perceived lack of input from other team members (Brandyberry & Bakke, 2006)

semester. The teams are set up and team membership is recorded before the first assignment task is released. I make no claims for the effectiveness of this method of team formation. This approach does not fully engineer team membership; neither does it leave students without support when forming teams. It does not prevent problems, but it also does not engineer problems such as social isolation and feelings of discomfit which the recommendations of Bryant and Albring might do. Therefore, although this method does not follow the recommendations to the word I am confident that the support given to the L4 students for team/group formation is appropriate and does not engineer problems from the outset. The difficulties of trying to create equally diverse groups from a cohort of students are possibly too great. Until there is a method to deal with this, partial self-selection with guidance may be better.

I will now look at the group-level factors and how they relate to my research. Group-level factors include structure of the group, cohesiveness and group size.

2.4.3 Group-Level Factors

The first group-level factor discussed by Bryant and Albring is structure of the group. This relates to the degree of diversity and roles within the group. The second is that of cohesiveness which they believe can be accelerated through the use of a contract and the third is group size.

Bryant & Albring (2006) use the 'structure of the group' factor to continue to emphasise the need to create diverse teams. They cite authors who allow teams to self select and those who do not. They conclude that tutors should control team membership. This is based on research conducted by Colbeck, Campbell, and Bjorkland (2000) who noted that students tended to select the same groups to work in throughout their course, which reduces their exposure to diversity[7]. This view is supported by one of the L6 leaders who participated in my research (Tina, 2009).

Tina explained in interview how she had chosen to work in the same tight-knit group of students whenever possible, even in the final year of her degree. This student, one of the most able in her year, surrounded herself with other high achievers. This was a very successful strategy for her in terms of academic grades. It also matches the findings of Baer (2003) where high and middle achieving students improved their individual learning by working in 'similar ability' groups (Baer, 2003). The L6 student believed that they had created a highly effective team. What Colbeck et al see as a problem, Tina sees as a successful strategy.

As well as recommending that tutors should control team membership, Bryant & Albring (2006) continue their discussion of group structure by recommending;

> *'Instructors should seek to form diverse teams, balancing gender and culture where possible.'* (Bryant & Albring, 2006, p. 249)

[7] Diversity in terms of skill set is seen as a benefit to teams from an information processing perspective. However, diversity in terms of cultural identity in a team could have a negative impact from a social identification perspective (Napier & Johnson, 2007). A collaborative learning perspective may be a balance of the two.

Spreading the number of men or women evenly amongst all teams could lead to problems on courses which are not gender balanced. Women may be isolated from other women in engineering and computing teams and similarly men from men in nursing teams. The same thing may happen for international students or any ethnic minority students which may lead to problems for those individuals (Napier & Johnson, 2007; Tonso, 2006). I would conclude that this has to be approached with care if tutors are to implement this recommendation.

The next recommendation from Bryant & Albring is to appoint a leader and a team coordinator. The students on the IS module are instructed to appoint team members to the role of secretary and librarian, to ensure that meetings are arranged and minutes taken, and that documents produced are stored safely (similar to a coordinator role). Leaders are not normally assigned to the teams. Only students who are part of my research study will be assigned 'leaders'. These are experienced L6 students who have been briefed to coach the level 4 students on team processes. Appointed leaders are seen as better than emergent leaders (Markulis et al, 2006), and students with more experience are considered more effective leaders by their peers (Duemer et al, 2004). So although the literature is divided as to the best structure for student teams, there is some agreement on the need for role clarification and leadership, which students taking part in my study will receive.

The next group-level factor discussed is cohesiveness. Bryant and Albring suggest that the establishment of norms will increase the cohesiveness within a team and that this can be accelerated by making the norms explicit within an agreed contract. They do not give any definitions of cohesiveness, but Hoegl and Gemuenden offer facets or characteristics of cohesion;

> *'In their meta-analysis (including 49 empirical studies) Mullen and Copper (1994) distinguish between three forces of cohesion: (1) interpersonal attraction of team members, (2) commitment to the team task, and (3) group pride-team spirit'* (Hoegl & Gemuenden, 2001, p. 438)

It would require further investigation to determine whether a group contract will increase commitment to team task and create team spirit. This is however a recommendation that we make to students. It is interesting to note that one of the three forces of cohesion is that of interpersonal attraction of team members. This should in theory be high in self-selected teams.

The final group-level factor discussed by Bryant and Albring is group size. They recommend a group size of between four and seven for student groups to minimise the effects of social loafing[8] that can occur in larger teams. This is in line with practice in the Information Systems module. In addition the Information Systems module uses a peer evaluation which allows team members to evaluate their own and each other's input with a mark out of ten to deter social loafing. This can differentiate the mark by a maximum of 20%.

[8] Social loafing occurs in large groups because there are more people to share the workload; hence, group members do not feel as individually accountable (Katzenbach & Smith, 2001, p. 89)

It is clear that the Information Systems project implements all of the group-level factors except for the issue of controlling group membership. However the teams are supported by tutors as they form and the self-selection may benefit team cohesion.

I will now look at the environment-level factors and how they relate to my research. Environment-level factors include task characteristics, reward structure and level of environmental stress.

2.4.4 Environment-Level Factors

In this final section I will examine the recommendations for good practice which relate to the environment in which a group project occurs. The environmental–level factors to be considered are those of task characteristics, reward structure and level of environmental stress. I will start with a discussion of task characteristics.

Bryant & Albring (2006) state that the most important task characteristic is suitability of task, with highly structured tasks being less appropriate for a group or team than a less structured task which requires team members to be interdependent. They do not discuss task characteristics in any greater depth but other authors do.

Tasks can be categorised as conjunctive, disjunctive or additive (Ellis et al, 2005). These categories are assumed to predict the performance levels expected from each team. For conjunctive tasks, performance is determined by the weakest team member (e.g. time for the whole team to complete an assault course); disjunctive, performance is determined by the strongest (e.g. identifying the correct answer in a problem solving project) and additive performance is determined by the average team member (e.g. summing the marks of individuals) (Alavi & McCormick, 2004). These categories were developed by Steiner (1972) when examining group processes and productivity and are based on the collaborative aspects of the tasks and tested mostly on self selected teams (De Vita, 2002, p. 155).

Brown (1988) describes these categories slightly differently explaining that they are all ways that a group can combine their efforts e.g. brain storming is an additive task; decision making and reasoning are disjunctive tasks; team mountaineering is a conjunctive task. Brown describes a fourth category where members can determine themselves how they would like to accomplish the task. This is called a discretionary task. The project which students in this research will attempt could be described as a discretionary task which will have some additive and some disjunctive subtasks.

According to Stevens & Campion (1994) teams out-perform individuals at disjunctive tasks but only if the teams are cognitively diverse (Sauer et al, 2006). This appears to contradict Baer (2003), but Baer examines the individual marks achieved after working in a cooperative learning group, in which case cognitively homogonous groups were better. Baer is measuring an individual's ability to learn (content), as opposed to measuring team performance. It is worth considering this point for a second – ultimately, what we do in terms of student team or group work needs to promote learning of content and process knowledge.

Another way of categorising tasks uses a task typology developed by McGrath (1984)which maps task type (intellective, creative, planning, psychomotor, contest, mixed motives, cognitive conflict, judgement), against process requirement (collaborative, coordinated or

conflict resolution) and performance requirements (cognitive or behavioural) (Straus, 1999). The students working on this project will have to deal with most of these task-types.

Other categories of task are maximising (increasing quantity and speed) and optimising (matching a predetermined standard) (Steiner, 1972) as seen in De Vita (2002, p. 155) and Brown (1988, p. 131). The students in this research will be working on an optimising project.

To summarise, the students in this research will be working on a loosely structured optimising project which is presented as a discretionary task. The task will include additive and disjunctive sub-tasks, covering most of the categories in McGrath's group task circumplex. This leads me to conclude that the task structure is suitable for a semester long team project.

The next environment-level factor is the reward structure. Bryant and Albring discuss the advantages and disadvantages of two approaches to assessment; the group only and the mixed-incentive approach. The group only mark is considered by some to encourage greater collaboration and cohesion; however the issue of 'free-riding' is a factor in student dissatisfaction (Napier & Johnson, 2007; Brandyberry & Bakke, 2006; Jalajas & Sutton, 1984) which can be alleviated to some extent through the mixed incentive approach. This allows for the different levels of effort or output of individual team members to be recognised in the grading system.

The students in my research have a mixed-incentive grading scheme. The piece of work is graded for quality; the students explain the main section in a face to face assessment with the tutor at which marks can be differentiated if team members fail to explain their sections satisfactorily; in addition, team members evaluate their input effort and those of the other team members as a mark out of ten. This mark affects twenty percent of the group mark. This means that only teams with team members that have performed to a similar standard in the face to face assessment, and have been judged by all team members to have contributed equally, receive identical marks.

The final environment-level factor discussed by Bryant and Albring is that of 'level of environmental stress'. Factors that affect this include how critical the output is and time constraints. Real-world projects will place a higher level of environmental stress on teams, as would a short timescale. The students in this research work from a case study and have 10 weeks to complete their analysis, with a formative progress check halfway through. The lecture and tutorials present the required technical knowledge on a weekly basis. I would conclude that the project provides a level of environmental stress that makes the task challenging without being overwhelming.

Bryant and Albring do not discuss environmental stress in detail, but move onto what I would class as the process stage where the students interact and work on the project. What happens in the process stage is the focus of my research.

Bryant and Albring recommend that the tutor is the team coach during the process stage. This is a recommendation that cannot always be followed due to lack of staff resource. This is where the L6 leaders will be able to support the team process as well as observe what happens in the teams.

2.4.5 Overview

In this section 2.4.1 (Input factors to enable team effectiveness) I have examined the input factors proposed by McGrath (1964,1984) and discussed by Bryant and Albring (2006), and applied those factors to the Information Systems module project the students in this research will work on (Table 1).

Factors (McGrath, 1964)	Recommendations (Bryant & Albring, 2006)	IS module project current practice	Comments on differences between recommendations and current practice
Individual: pattern of member skills	disperse talent evenly	X	A social identification perspective would not necessarily recommend dispersing talent
Individual: attitude	disperse those with low preference for group work	X	Dispersing such students may result in social compensation
Individual: personality	none	MBTI test	
Group: structure of the group	Tutor controls group membership.	Tutor supported	Tutor supports the students as they form the groups but does not control the process
	Appoint leader	✓	
Group: cohesiveness	Create a contract	✓	Interpersonal attraction of team members should be high in self-selected teams
Group: size	4-7 to minimise social loafing	✓	Plus peer evaluation
Environmental: task characteristics	None given	✓	Discretionary (inc. additive and disjunctive tasks) and optimising, requiring collaboration, co-ordination and conflict resolution
Environmental: reward structure	Mixed incentive	✓	Face to face, tutor differentiated, peer evaluated
Environmental: environmental stress	Team coach	✓	L6 leader will take on this role

Table 1 Information Systems project audit

The table shows that the IS module project meets many of the recommendations. Where there are alternative views, such as grouping of students into teams, I have presented the alternative research and discussed additional theories, such as categorisation of tasks.

The aim of this section is to show that although the setting up and structuring of the IS project may not implement all of Bryant and Albring's recommendations, it is appropriate as a level 4 student project and therefore appropriate as a focus for the research study. The input factors do not engineer problems that might inadvertently create isolation for some team members.

The introduction of L6 leaders to support the team process is a way to address the recommendation of using a team coach. This audit suggests that the L6 students are not being placed into an environment that is inherently problematic and that it is an appropriate vehicle to use when studying the experience of peer leaders.

2.5 Summary

In this chapter I have examined the literature about group work in higher education. I have positioned my research relative to recent teamwork research, examined a set of recommendations for good practice based on McGrath's (1964) model of group effectiveness and used the recommendations and a critique of the recommendations to determine the suitability of the Information Systems project as a group project and conclude that it is a suitable vehicle for my study into cross year peer led teams. In the next chapter I examine the methodological choices that have shaped my research.

3 Chapter 3: Methodology

3.1 Introduction

In the previous chapter I examined a number of recommendations for good practice (Figure 3 McGrath's model of group effectiveness as adapted in Bryant & Albring (2006), p15) in undergraduate group or teamwork and applied them to the Information Systems group project and concluded that this group work project was suitable for my research study. I also mapped out a number of recent research studies and papers onto a conceptual map which shows that there are fewer examples of research relating to the humanist and critical knowledge domains compared with evaluative or descriptive studies (Figure 2 Teamwork research knowledge domains, p13). In this and the following chapter I look at the philosophical underpinnings of my research approach along with the tools chosen and how they were employed (described in this chapter and Chapter 4: Method).

In this chapter my main focus is on my choice of a phenomenological and critical approach to my study which concentrates on the humanist and critical knowledge domains and supports the main research questions (see Figure 1 The research questions p3);

- **What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders?**
- **How do L6 student leaders apply prior knowledge when mentoring cross year peers?**
- **How/when do L6 student leaders seek new knowledge to solve perceived problems?**
- **Will 'cross year, small team peer leading' produce a more favourable self assessment of skill development relative to the comparison group?** [9]

It is this approach which is less prevalent in studies of undergraduate teamwork especially in the area of computing and uses diary accounts (Appendix E provides a sample) and interviews (Appendix G) as the main data collection tools, along with the mapping of diaries (also referred to as blogs) as an holistic approach to summarise the main events over a number of weeks (Appendix F gives one example), and the writing of typical level descriptions and situated level descriptions as analytical tools (explained in detail in Chapter 5).

In the following section I describe how the work of researchers Giorgi (1985) and Smith & Osborn (2003) along with critical commentaries by Paley (1996) and Jennings (1986) have influenced the development of my methodological approach. Later in this chapter I examine my own position within the research study and finally show the position of my methodology within the education research domain.

3.2 Qualitative Research

The data I am collecting consists of verbal and written descriptions and requires appropriate methods for collection and analysis which reflect the philosophical underpinnings of the work. Data in this format can be analysed either quantitatively or qualitatively; a quantitative approach might count specific occurrences and perform a statistical analysis whereas a qualitative analysis may require the researcher to interpret the meaning of a piece of text

[9] With respect to this research question I employ an evaluative approach using surveys as data collection tools (Appendix A and B).This approach is similar to many other group or teamwork studies and is not phenomenological. These were self reported, pre-coded surveys which had been developed during preliminary work with the involvement of SHU computing students (Appendix H).

(Smith, 2003). Smith acknowledges this is an oversimplification that suggests it is easy to differentiate between the two approaches when in fact there can be significant overlap with interpreting an outcome for quantitative research and determining the strength of feeling a possible outcome of qualitative research. However despite its over simplification this characterization allows me to take the first step in investigating the framework for my research. My research collects qualitative data and analyses it for meaning and I need an appropriate methodology to allow me to do this.

In order to develop an appropriate methodology for investigating what happens in student teams I examined a number of methodologies that collect qualitative data and analyse for meaning. Phenomenology is one such qualitative methodology but one that needs to be considered carefully due to the numerous representations and some would say misrepresentations of its methods and the difference between phenomenology as a philosophical paradigm (Husserl, 1931) and phenomenology as a method used in psychological research (Giorgi, 1985). A related method is that of interpretive phenomenological analysis as employed by Smith & Osborn's (2003). Both Giorgi and Smith have influenced my approach to this research. These authors were chosen as they are established proponents of approaches that create meaning from the data, rather than from a prior theoretical framework from which codes or categories are created: inductive rather than deductive. I also consider how my approach differs from the philosophical phenomenology of Husserl (1931).

The main reason for considering phenomenology as a methodology is because I wanted to explore the experience of the L6 leaders without pre-empting or pre-coding the experience.

In this investigation of phenomenology I examine typical research areas and epistemological claims. I follow on with a comparison of the methodologies based around the four characteristics of phenomenology and summarise these in Table 2.

3.3 Phenomenology

Ashworth (2003) notes that phenomenology was initially concerned with clarification of the basic concepts of all the scholarly disciplines but owing to the centrality of experience and meaning in this approach phenomenology became important for the practice of research in the human realm.

> *'The human realm essentially entails embodied, conscious relatedness to a personal world of experience. The natural scientific approach is inappropriate. Human meanings are the key to the study of lived experience, not causal variables' Ashworth* (2003, p. 13)

I chose phenomenology in order to discover the personal experience of the L6 leaders as they journeyed through the peer support initiative. Determining and controlling variables, and constraining their experience into my own pre-determined framework seemed wholly inappropriate. According to Ashworth (2003) the individual is a conscious agent whose experience must be studied from the 'first-person' perspective and phenomenology offers a way for me to study this. Various other candidates including grounded theory and action research were considered but phenomenology was selected because it is resolutely directed at the discovery of human meanings.

According to Giorgi & Giorgi (2003, p26) phenomenological research aims to *'clarify situations lived through by persons in everyday life.'* This type of research aims to remain faithful to the phenomenon and the context: a situation in which individuals have firsthand experience that they can describe.

When I commenced my planning, I thought that as well as being a philosophy, my chosen methodology, phenomenology, was a standard research methodology with shared epistemological underpinnings, set methods, using well defined tools. I discovered that the term 'phenomenological research' was often used to mean 'subjective research' (Jennings, 1986), rather than research that used a specific set of tools and owing to the variable interpretation and slim description of steps within the method, along with the criticism of research done under the umbrella of phenomenology (Paley J., 1998; Paley J., 1997), I needed to carefully explain the origins of my methodological approach.

> *'It is suggested that, while the methods used in [some] 'phenomenological' research may still have some legitimacy, they cannot achieve what they are alleged to achieve, and they should be detached from the framework of Husserlian ideas and terminology which is supposed to justify them.'* (Paley J., 1997, p. 817)

I will heed Paley's advice and explain the framework to which I am attaching my research, explain the terminology as it is used within that framework and show what epistemological claims I am making with this research.

3.3.1 Different epistemological claims

The phenomenology of Giorgi, and Smith and Osborn studies a given experience through third person accounts. This is in contrast to a study by Gendlin (1962) (described in Jennings (1986)) which follows a strict Husserlian approach. This study reports on a phenomenon that is recognised by psychotherapists where in any instance of conscious awareness a 'bodily felt' experience is felt prior to formulation of words or concepts by the patient. Patients will refer to the feeling before being able to formulate a reason for feeling it. This study takes a stricter Husserlian phenomenological approach and examines the concept which has been termed direct reference. This concept is described in Jennings (1986);

> *'When consciousness itself is taken as it immediately presents itself to awareness (in any given moment and in any circumstance), we always find that the essential quality and characteristic of consciousness is ongoing bodily felt "experiencing" (an essence).'* (Jennings, 1986, p. 1238)

According to Jennings, the 'bodily felt' experiencing is the essence[10], or objective reality, which has been separated from any subjective interpretation.[11] The epistemological claims made by

[10] Another word for concept or universal (Paley J. , 1997)

[11] Another 'essence' is the notion of intentionality. Intentional analysis is a term in phenomenology. In all the studies the participants are conscious of a given object/event, and the consciousness is 'intentional', meaning it is directed at a given object/event, so it could be stated that 'intentional analysis' is carried out in all the studies (if the data is a description given by the research participant).

> *'Husserl demonstrated that every act of consciousness was necessarily "intentional", which is to say, it is always directed toward, or pointing toward, some "object" '* (Jennings, 1986, p. 1236)

Gendlin are very different to those made by Giorgi, and Smith and Osborn. It is the relationship between the subject and object (the characteristics of experiencing) which is being studied by Gendlin, and the meaning of the experience itself by the other studies.

Gendlin, in his research, examined the nature of consciousness itself, whereas Giorgi, and Smith and Osborn are studying the subjective interpretations of their research participants. These subjective interpretations will be dependent on a number of factors including culture, historical age, and individual opinion along with many others, whereas Gendlin claims to have discovered an 'essence' which is universal, global and independent of culture, historical age, and individual opinion. Jennings emphasises the difference between the two types of study;

> *"...the forgotten distinction between phenomenology and psychology is that the former analyzes the essential character of various types of conscious acts, whereas the latter studies the empirical contents of actual subjective experiences corresponding to actual existent environmental events (i.e., subjectivized objects in the natural attitude[12])"* (Jennings, 1986, p. 1240)

However this distinction has not been forgotten, or over looked by Giorgi (1985). He adapts the phenomenological approach to psychological research and justifies its use.

Phenomenology provides an approach to studying 'how something is experienced' and allows me to explore what is happening in student teams in a way that is personally 'meaningful' to the L6 leaders. This will be collecting subjective experiences corresponding to actual existent environmental events and it is to Giorgi's framework that I attach my research. I am not studying the essential character of conscious acts, but the subjective experiences as reported by the L6 leaders. The following sections will continue to clarify the important differences between the methodological approaches based on the four characteristics of philosophical phenomenology.

3.3.2 The four characteristics of philosophical phenomenology

According to Wilding & Whiteford (2005) with phenomenology there is no methodological orthodoxy. However Giorgi writes that according to Merleau-Ponty (1962) there are a set of characteristics of the phenomenological method which are; description which excludes any analysis; the reduction; the search for essences; and intentionality. According to Jennings (1986) these characteristics are not procedural steps in a routine. The next section examines the terminology on which these characteristics are based and clarifies the differences between Husserlian phenomenology and the phenomenological approaches of Giorgi, and Smith & Osborn which I will be using.

3.3.3 Differences between phenomenological approaches based on the four characteristics

This section looks at the terminology used in the four characteristics of phenomenology which are; description; reduction; search for essences; intentionality

The first characteristic, and the starting point for data collection, is description. What is important to note is that the description, within philosophical phenomenological study, is a

[12] Therefore not bracketed

self description but from a phenomenological psychological study can be third person description (Giorgi, 1985). The nature of the data has consequences for the second characteristic in phenomenology – the reduction.

The reduction is not the second 'step' but a state of mind. Husserl's philosophical phenomenology hinges on the 'phenomenological reduction' (Jennings, 1986, p. 1236), however he did not describe the complete problem or procedure for the reduction (Natanson, 1973, p. 75). The first move in the phenomenological reduction is the 'bracketing of the natural attitude'. We are told what that is;

'[The natural attitude] is the pervasive unquestioned assumption that our everyday surroundings are real and provide the same reality for others.' (Jennings, 1986, p. 1237)

... what has to be done in order to 'bracket',

'We put out of action the entire ontological commitment that belongs to the essence of the natural attitude; we place in brackets whatever it includes with respect to being.' (Husserl 1913 p. 111) in (Paley, 1997, p. 188)

... but not how to do it.

Bracketing the natural attitude is not the same as bracketing the existence of the world. My interpretation of this is that the tools for interpretation – for example the laws of natural science, are being suspended. I think this is a way of collecting data that has not already been interpreted through any particular filter.

'The term phenomenology derives from the general meaning of phenomena as it is used here: It is the study of "pure" phenomena as they present themselves to consciousness, but with any assumptions about nature, existence, and value temporarily set aside.' (Jennings, 1986, p. 1237)

In philosophical phenomenology the natural attitude is bracketed at the point of data collection, but this is not so for any methods using third person descriptions. Giorgi's phenomenological psychological approach collects naive descriptions, but the researcher cannot bracket any assumptions at this point and Giorgi would state that this is not necessary as a reduction has already been done by the participant.

'The very fact that a concrete situation that was lived through prior to any thought about being studied and analyzed can later be taken as an example of [the subject under study] already indicates a reduction' (Giorgi, 1985, p. 69)

So for Giorgi, the reduction is only an issue during analysis. Smith and Osborn (2003) collect data through semi-structured interviews and bracketing is not part of the method.

The third characteristic of phenomenology is the search for essences. Philosophical phenomenology uses eidetic reduction or free variation to create structures or essences.

' the procedure involves what [Husserl] calls the method of 'free variation', by which I choose an instance of the concept concerned and, in my imagination, examine the range of possible forms it can take. By adding or subtracting certain features, and noting the points at which the

object in question ceases to exemplify that concept, I can identify what is, and what is not, essential to the concept' (Paley, 1997, p. 190)

Giorgi's approach is not to create 'essences' which are universal, but to create typical structures. This is done by creating situated-level descriptions which describe the main features of a given experience and compare those to other descriptions. Common elements can be combined to create a typical-level description. These may be extended or generalised, but are not claimed to be universal essences. The outcomes from Smith & Osborn's (2003) approach is more personalised and is the form of a narrative account. Having looked briefly at the issue of the search for essences, I will move onto the final characteristic – intentionality.

According to Jennings (1986), one of Husserl's most brilliant insights was the intentionality of consciousness;

> *'He recognized that the quintessential property of consciousness is intentionality... Husserl demonstrated that every act of consciousness is necessarily "intentional," which is to say, it is always directed toward, or pointing toward some "object." Thus the preeminent feature of human consciousness is its essential directionality.'* (Jennings, 1986, p. 1236)

The focus of a phenomenological study is on the 'directedness' of consciousness. This is where there appears to be a major departure between philosophical phenomenology and other phenomenological approaches.

> *'Instead of analyzing the content of actual reactions to an actual object of perception (in this example, a new black family in Middletown U.S.), the phenomenologist analyzes the directedness of consciousness to this class of objects in general (i.e., intentionality).'* (Jennings, 1986, p. 1238)

The other phenomenological methodologies analyse the content of the reaction or experience whereas philosophical phenomenology analyses the nature of consciousness itself. Table 2 on the following page gives an overview of the discussion to this point.

Characteristic	Husserl	Giorgi	Smith and Osborn
Methodology	Phenomenology	Phenomenological psychology	Interpretive Phenomenological Analysis
Epistemology	Objective, universal	Subjective, The epistemological claim reaches only as far as presence, not to actual existence. Local, moving towards generalisations, but not universal	Subjective – individual's perception of an object or event. Local, only moving slowly towards generalisations
Methodology	Set of principles	Systematic methods, light in application	Systematic methods, light in application
Data	Self description	Third person description	Third person description
Reduction	Bracketing the natural attitude during data collection. Setting aside any assumptions. Do not assume a fixed reality that is shared by others	Bracketing the natural attitude during analysis. Bracketing not required during data collection	Bracketing not mentioned
Essences	Outcomes are essences - UNIVERSALS. These are not subjective but transcend subjectivity. An essence is not relative (Jennings, 1986)	Outcomes are general or local - not UNIVERSAL - descriptions (Giorgi, 1985)	Outcomes are a narrative account
Intentionality – directedness of consciousness	Instead of analyzing the content of actual reactions to an actual object of perception the phenomenologist analyzes the *directedness* of consciousness to this class of objects in general.	Content of actual reactions	Content of actual reactions

Table 2 A comparison of phenomenological methods in relationship to Husserl's philosophical phenomenology

The discussion demonstrates the differences between the inductive approaches discussed, but with respect to the phenomenological approaches – Giorgi's phenomenological psychology and Smith and Osborn's IPA, where did the change from studying objective reality to studying subjective experience occur? In the following section I will try to identify the step that Giorgi takes to change the focus of phenomenology from 'discovering objective reality', to analysing subjective experience.

3.3.4 The move from objective to subjective

Table 3 Adapted from (Paley, 1997); a phenomenology hierarchy, shows the association between Giorgi and Husserl via Merleau-Ponty. Where does the change between studying objective reality to studying subjective experience occur? I believe this happens as Giorgi

adapts Merleau-Ponty's description to make the phenomenological method useful to human science (Giorgi A., 1985, p. 47).

Philosopher	Husserl			
Philosophical commentators	(Spiegelberg, 1982)	(Ricoeur, 1981)		(Merleau-Ponty, 1962)
Philosophically-minded social scientists	(Natanson, 1973)	(van Manen, 1990)	(Schutz, 1967)	(Giorgi A. , Psychology as a Human Science: A Phenomenologically Based Approach, 1970)
Regularly cited researchers	For example (Parse, 1981)			

Table 3 Adapted from (Paley, 1997); a phenomenology hierarchy

There are a number of moves away from strict phenomenological interpretation in order to make the approach useful to the study of human sciences. I think the important one is how Giorgi proposes to deal with the reduction (listed as Merleau-Ponty's second characteristic). Giorgi illustrates the reduction in an experimental context where a respondent is shown taboo words and neutral words. The respondent reports seeing the neutral words even though the taboo words were shown for longer. The researcher still records what is reported even though she knows the objective reality. Giorgi argues that this is a reduction[13].

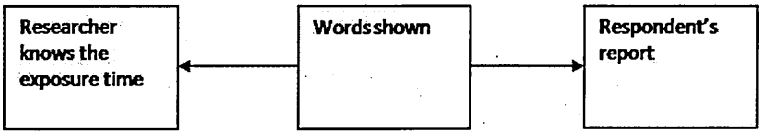

Figure 4 Experiment where objective reality is 'known' through instrumentation

However, for much research in the human sciences, the objective reality may not be known.

Giorgi gives a second illustration from therapy where a client describes an early memory that the therapist knows to be untrue from other sources. The therapist allows the client to continue the description of the experience and records it as an affirmation of what the client experienced. Giorgi also classes this as a reduction. We do not know from this illustration anything about an event that may have prompted the memory described by the client.

[13] The researcher brackets the natural attitude that everyday surroundings are real and provide the same reality to others.

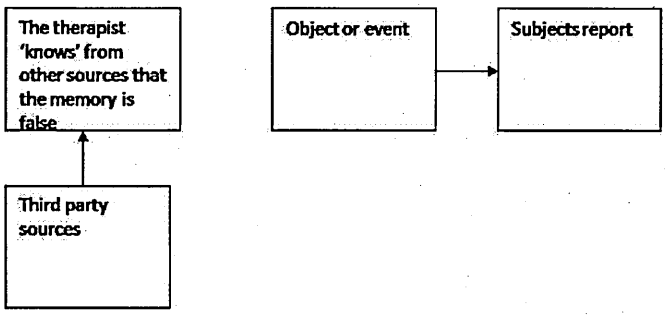

Figure 5 Objective reality is not mentioned - the therapist's knowledge is from other sources

This is similar to my research. What will be dealt with here is a comparison between the subjective realities as described by the L6 leaders along with my interpretation of these events.

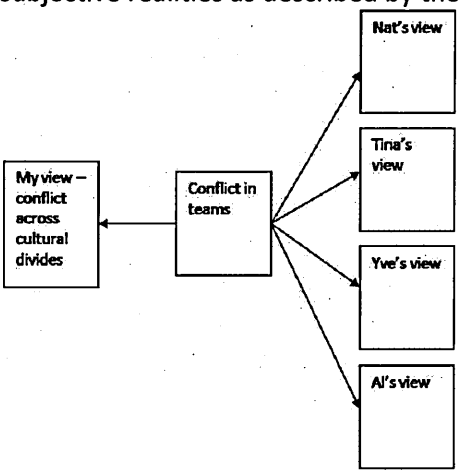

Figure 6 My study where the objective reality is unknown

In this case the reduction is applied by acknowledging and presenting what is reported with the understanding that this does not claim to be objective reality. I will analyse differences in perception and use other sources to try to understand why there is such a difference.

In this section I have commented on the phenomenological approaches that I will adopt for my study and compared them to philosophical phenomenology. I have identified the modification which moves the approach from an analysis leading to objective reality, to an analysis of subjective experience, briefly relating the examples to my study. In the next section I will continue to show how my adopted methodology relates to those described above with reference to the technical detail as well as the philosophical underpinnings of the approach.

3.4 Chosen phenomenological approach

In the previous section I evaluated two methodological approaches and compared them to a philosophical phenomenological approach. In this section I describe the methodological approach I adopted and applied based on that evaluation.

The epistemological claim for my methodology reaches only as far as presence, not to actual existence. The outcomes of the analysis will not claim to be universal, but typical for those operating in a similar context. I will apply systematic methods to prepare the data for analysis, but I am aware that some of the steps in transformations and interpretations of the data cannot be made transparent and so other methods are needed to give the analysis credibility. These include a device to compensate for the difficulty in bracketing, and a description of my

position with respect to the main findings. The following sections provide more detail for each of these points.

My research used third party reports from diary accounts and interviews. My participants, L6 student team leaders, know that they are part of a study and that the data will be analysed, so I cannot claim that there has been a 'reduction' in the way that Giorgi is able to[14]. However, the participants were asked to record their experience as they felt it happened with no requirement from them to analyse what was happening – what Giorgi terms naive description. Certainly the first section of the diary record was intended to be pre-reflective. The participants were aware of the type of narrative that was required; however, I do not believe that they could record their experience without there being any filtering or analysis. This means that in the analysis phase there will be issues of interpretation, participant's interpretation of each experience, and my interpretation of their report, in other words a double hermeneutic. These concerns are similar to those in interpretive phenomenological analysis (Smith & Osborn, 2003).

One major contrast between my study and the others referred to above is that the data collected is fresh, contemporary and written within days of the event. This means that the ideas conveyed in the narrative will reflect their 'more immediate' experience. There will be fewer intervening experiences that will alter the lens through which they formulate their blogs and the reports are submitted before the research participants see the consequences of theirs or others' actions. The method of submission also means that any subsequent editing by the participants will be apparent and provide an audit trail. This could be seen as a strong point in terms of data quality for this research.

Once data collection has started, methodological issues with regard to analysis continue to arise. No specific guidance is given by philosophical phenomenologists as to how to accomplish this stage so I followed Giorgi's approach.

The first step in the analysis is to read the whole description.

> *'The phenomenological perspective is a holistic one, and so one does need to know the global sense of the description before proceeding farther.'* (Giorgi & Giorgi, 2003, p. 33)

This is an aspect of the approach that I returned to throughout the analysis - the phenomenological perspective is a holistic one. However, methods are needed to deal with large amounts of textual data, so I needed to reduce the blogs and transcripts, if only temporarily, to units that could be analysed.

The practical methods of Giorgi, and Smith and Osborn employ the device of coding in which the written account is divided in some way and commented upon. This is done differently in each of the approaches. Giorgi systematically divides up the transcript into meaning units (Giorgi & Giorgi, 2003), whereas Smith and Osborn employ free textual analysis, where there is no requirement to comment on every line or every meaning unit and there are no rules as to the sort of comment that might be made (Smith & Osborn, 2003).

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[14] *'The very fact that a concrete situation that was lived through prior to any thought about being studied and analyzed can later be taken as an example of [the subject under study] already indicates a reduction'* (Giorgi, 1985, p. 69)

I approached this coding section following Giorgi's method and the diaries and interview transcripts were divided into meaning units and commented or transformed into third person commentaries. Giorgi marks the scripts with a slash. I used digital technology and separated the text into its own cell in a spread sheet.

> *'It is important to note that there are no 'objective' meaning units in the text as such, they are correlated with the attitude of the researcher.* (Giorgi & Giorgi, 2003, p. 33)

The systematic numbering of each meaning unit is important for referencing the participant's quotes when they are presented in the analysis, but Giorgi acknowledges that the units into which the text is divided will depend on the individual analyst.

The next step involves active transformations. In laboratory settings the transformations occur when the data is collected by modifying and controlling the environment. In phenomenological research the environment is naturalistic and the transformations are performed on the raw data. The transformations bring out things that are implicit to make them explicit in some way. In the same way that the meaning units are correlated with the attitude of the researcher, so too are the transformations.

> *'This aspect of the transformation is what allows the analysis to reveal meanings that are lived but not necessarily clearly articulated or in full awareness'* (Giorgi & Giorgi, 2003, p. 34)

It was during this process of separating and transforming the meaning units that I created the mind maps. In appendix F, I include an example of the mind map created for one of the L6 leaders which takes key events from the blogs in appendix E and maps them out week by week. This was so I could maintain a holist view of the data in accordance with Giorgi's earlier quote. This is a departure from the other methodological approaches and was my own introduction. This gave me an overview of what was being communicated in the entries. Each time I summarised part of a diary entry, I went back to the data to consider if other interpretations could apply. This was my method of becoming immersed in the data and as I was reading and transforming (mapping), I found I was critically questioning the texts (working in the critical knowledge domain as previously shown in Figure 2 Teamwork research knowledge domains, p13). I was asking the sort of questions that are typical of interpretive phenomenological analysis such as; what is the person trying to achieve here? Is something leaking out here that wasn't intended? Do I have a sense of something going on here that the participants themselves are less aware of?' (Smith & Osborn, 2003)

Although systems of coding are used within the methods, the instrument of analysis is still the researcher. Giorgi illustrates how the reduction is applied during data collection, but does not explain how to do this during analysis. Therefore I have used three devices to try to minimise researcher bias. The first device uses a critical friend to examine a portion of the analysis documents – the data and the maps, to check if bias is being introduced at this stage. The second approach is to limit additional literature reviews until the initial stage of analysis has been completed. It was after the initial analysis stage that I noticed the emergence of a number of unexpected issues. This prompted a review of the literature on culture and diversity which then informed the continuing analysis. However I would not say that this approach fully constitutes bracketing the natural attitude. Being able to eradicate any assumptions or biases

is a desirable skill, but I am not sure that it is possible and therefore the positionality of the researcher within the research becomes important in terms of the analysis.

I therefore employed a third device to make my position within the research more transparent. This is important especially as some of the emergent themes were associated with taboo issues for both the co- researchers and me. As the issue of different perceptions, between the L6 leaders and me, of the sites for conflict in the L4 teams became an important aspect of my findings I have provided an in depth reflection on my position later in this chapter. Now I will return to the technicalities of the analysis and the presentation of the analytical constructs.

Giorgi's approach is not to create 'essences' which are universal, but to create typical structures and this has been my approach. For each of my four L6 leaders I have created situated-level descriptions, following Giorgi's method (Giorgi, 1985) which can be found in section 5.2.1, p53. After examining the descriptions for each leader, I considered the similarities and differences between them and created typical level descriptions. These descriptions do not make any claims to be universal – so there would be no claim that all group work situations would have these characteristics, but that they are typical for students in these particular situations. At this point in the analysis – having read the blog entries and interview transcripts many times, I started to ask questions along the lines of;

> *'Do I have a sense of something going on here that the participants themselves are less aware of?'* (Smith & Osborn, 2003, p. 51)

Or, if it is not a case of being less aware, are the L6 leaders suppressing thoughts and feelings that may be considered taboo. This concern as to how to research things that may be considered taboo or unpalatable led to the construction of the commentaries which I created from my research data and my second literature review. This step was to see if my thoughts and questions were reflected or answered through other research. During this stage my analysis took on a more critical slant as issues of powerlessness and disadvantage emerged for some of the participating students, which again relates to the positioning of my research in the humanist and critical knowledge domains in Figure 2 Teamwork research knowledge domains. These emerging themes, and my additional reading, prompted me to examine my position as a practitioner. In the next section I provide the framework for this reflection.

3.5 Summary of my methodology

Phenomenology presents itself as a useful inductive methodology for exploring an individual's experience by collecting and analysing qualitative data. However, I have tried to take care to emphasise that the method I am adopting is not phenomenology as a philosophical paradigm proposed by Husserl (1931) . I will summarise my methodological approach so far;

- I have adopted Giorgi's approach to phenomenology with some modifications
- I created situated-level descriptions and typical-level descriptions for my participants
- I used Smith and Osborn's approach to interviewing, rather than Giorgi's unstructured approach as I had limited time and a limited number of participants who had been through this particular experience.
- I used a critical friend to check the transformations and maps that I created

- I delayed sections of the literature review to help to mitigate the problem of bracketing (reduce the number of assumptions during analysis, by reducing the prior knowledge).
- I have presented a statement of my position (which I discuss in section 3.6.3) to provide others with an insight into how my world view would influence my interpretation.

In this section I have described my phenomenological approach to the research and detached it from philosophical phenomenology and demonstrated how it is aligned with other phenomenological or inductive research methods. The next section presents my statement of position which is based on a framework for racial and cultural consciousness. This reflection was conducted when themes emerged from the analysis that suggested conflict was occurring across cultural divides and was useful within a phenomenological study in that it helped me as a researcher to consider my 'natural attitude'. To bracket the natural attitude a researcher needs to be aware of the events that have helped to form that attitude. The framework for this reflection is critical in nature and moved my analysis into the critical knowledge domain as shown in Figure 2 Teamwork research knowledge domains p13.

3.6 Reflections on positionality

The previous section described my phenomenological approach to the research which includes a need for a statement of positionality. In this section I present my statement of position which is one of the devices I have employed to promote greater transparency in the analysis stage of the research. Researcher positionality has implications for the research methodology as well as the ethics of the research.

This statement about my position was developed as a reflection after data collection and during the analysis. Other examinations of my position were conducted during the planning stage. However, the nature of the research; an exploration, means that the issues that would emerge and my relationship to those issues would become clearer as the research progressed. Observations reported in teamwork literature in higher education (Napier & Johnson, 2007; Tonso, 2006), combined with observations as a practitioner, suggested that conflict and/or withdrawal would be an issue in some teams. This, indeed, did prove to be the case. What I had not realised was that the boundary of the conflict reported could be related to cultural diversity so that during analysis I would need to examine closely issues concerning racioethnicity[15] and issues of awareness of prejudice. Such a reflection is, as a member of the white majority, an uncomfortable one as my own awareness of possible discrimination or disadvantage is increased, and I am forced to review my own contribution to that discrimination. The following framework is proposed as a reflection on positionality when working with people of colour, but as stated by Milner in the end notes of his paper, it could be applied to any dimension of cultural difference.

> *'It is important to note that, among other factors, issues of gender, language, and socioeconomic status (SES) are also critical to consider in discussions such as the one presented in this article. Because of page restrictions, I focused on race and culture in*

[15] Used by (Cox, 1993) race is used to refer to individuals or groups defined on the basis of physical criteria and ethnicity to those defined on the basis of cultural criteria or geographical area.

favor of depth over breadth. It is conceivable that future discussions will include such matters omitted in this article.' (Milner, 2007, p. 398)

It can be seen from my statement later in this section that issues of gender and class emerge alongside reflections on race. These reflections give some insight into my world view and how that may influence my analysis. Although the process of reflection is at times uncomfortable, it is valuable because it has brought to the fore issues that had until this point remained unexamined. The points to consider during the analysis which come out of this reflection include; my underlying feminist agenda brought again into focus; being a gender minority for a lot of my time when studying and working; having limited contact with other cultures, but an interest in the stories from those cultures; having a past history in helping disadvantaged young people; being aware that the system does not always support them; noting the different cultural influences for me compared with the L6 leaders; being introduced to the idea of 'warm demanders'. The following sections introduce the framework for the reflection and the reflection itself.

3.6.1 How to deal with race as a researcher

Milner (2007) states that a researcher does not have to be of the same race as research participants, but needs to pursue knowledge about themselves and the culture they are researching. To guide researchers, he developed a framework for racial and cultural consciousness which aims to prevent;

> *'... misinterpretations, misinformation, and misrepresentations of individuals, communities, institutions, and systems'* (Milner, 2007, p. 388)

His framework was developed from the body of literature relating to colour and culture line, which looks to disrupt and extend notions of normality (epistemologies based on the white notion of knowing); deficit discourses (different does not mean worse); and socioeconomic status rationale (it is not just about being rich or poor - race, gender and culture are important factors).

The framework is influenced by critical race theory which emerged from critical theories in law, sociology, ethnic and gender studies, and is intended to challenge the dominant discourse on race and racism as it relates to education and has three main tenets. The first is that racism is ingrained in society and for that reason it must be present in education and education research and has become normalised. The second is that it is important for people to name their own reality in education, and that the stories told are stories of race. Finally there is the issue of convergence of interest in which only when the interests of the powerful majority converge with the minority, will change be allowed.

Milner points out three dangers for researchers that can occur with colour or culture blind approaches which can be seen, unseen and unforeseen. One 'seen' danger with my research occurred at the time I had to choose which L6 leaders to follow up through interview. If I had been trying to present the most typical experience, I would have selected the all male groups, with male leaders. This would then have promoted the view of the powerful majority of students in computing and neglected the female and ethnic minority voice.

In terms of teacher education, examples of 'seen' (silence from teachers in discussions of racism), 'unseen' (perpetuation of negative stereotypes about certain groups of students) and

'unforeseen' dangers (misinterpreting the needs and patterns of culturally diverse students) are given. The teacher education perspective is as important as the researcher perspective for me as a practitioner researcher because both roles are combined. I am aware that practitioners do not debate issues of racism on undergraduate courses in computing, although issues of 'culture' are debated on international courses in computing.

The following section uses Milner's framework as an exploration of my own position, within this piece of research. If the framework is expanded to include other cultural identities, not simply race, then my research can promote the voices of white women, men and women from diverse racioethnic backgrounds and disabled men and women and my reflection will include these additional factors. Although critical race theory, on which this framework is based, has originated in the US and is less applied in other western societies, Gillborn (2006) argues for its relevancy to UK education policy and practice. Gillborn's view is discussed further in chapter 5.

3.6.2 A framework for researcher racial and cultural positionality: working through the dangers

The first section of the framework allows me to consider and document the racial and cultural influences that have shaped my sphere of awareness and contributed to my research decisions, practices and approaches. Rather than present the reflection as a series of bulleted points, I will present the questions from the framework in Table 4 on the following page, and then the response as a broad account. The sections are 'researching self'; 'researching self in relationship to others; 'engaged reflection and representation' and 'shifting from self to system'.

Section	Questions
Researching self	What is my racial and cultural heritage? How do I know? What ways do my racial and cultural backgrounds influence how I experience the world, what I emphasize in my research, and how I evaluate and interpret others and their experiences? How do I know? How do I negotiate and balance my racial and cultural selves in society and in my research? How do I know? What do I believe about race and culture in society, and education; how do I attend to my own convictions and beliefs about race and culture in my research? Why? How do I know? What is the historical landscape of my racial and cultural identity and heritage? How do I know? What are and have been the contextual nuances and realities that help shape my racial and cultural ways of knowing, both past and present? How do I know? What racialized and cultural experiences have shaped my research decisions, practices, approaches, epistemologies, and agendas?
Researching self in relationship to others	What are the cultural and racial heritage and the historical landscape of the participants in the study? How do I know? In what ways do my research participants' racial and cultural backgrounds influence how they experience the world? How do I know? What do my participants believe about race and culture in society and education, and how do they and I attend to the tensions inherent in my and their convictions and beliefs about race and culture in the research process? Why? How do I know? How do I negotiate and balance my own interests and research agendas with those of my research participants, which may be inconsistent with or diverge from mine? How do I know? What are and have been some social, political, historical, and contextual nuances and realities that have shaped my research participants' racial and cultural ways or systems of knowing, both past and present? How consistent and inconsistent are these realities with mine? How do I know?
Engaged reflection	This section does not include any questions
Shifting from self to system	What is the contextual nature of race, racism, and culture in this study? In other words, what do race, racism, and culture mean in the community under study and in the broader community? How do I know? What is known socially, institutionally, and historically about the community and people under study? In other words, what does the research literature reveal about the community and people under study? And in particular, what do people from the indigenous racial and cultural group write about the community and people under study? Why? How do I know? What systemic and organizational barriers and structures shape the community and people's experiences, locally and more broadly? How do I know?

Table 4 Framework for researcher racial and cultural positionality

3.6.3 My racial and cultural positionality

This section presents extracts from my reflections on positionality based on an application of the framework in Table 4 Framework for researcher racial and cultural positionality. The full application can be found in appendix Q where each section of the framework is addressed. In this section the extracts will be presented without the framework questions.

A summary of cultural heritage, influences and historical landscape

My cultural heritage is that of hard work and deferred gratification. My racial and cultural heritage was originally that of the white working class, who conform to religious conventions but without religious conviction, which I then rebelled against by adopting, for a while, religious convictions. As a young woman I made gender based decisions for study and work which had an underlying feminist agenda. My exposure to other ethnic influences has been limited until recently. Education is valued.

My racial and cultural background has influenced how I experience the world in that I have been more concerned about the young women leaders than the young men in my research study. I thought about the diversity of the leaders but was mostly concerned about the British Asian woman's experience. I expected the leaders to work hard and to prepare for meetings. Only some of them did this. When assigning L6 leaders to groups I was more concerned about women being minorities in the groups, than racial minorities. I now realise that I am likely to be lacking in awareness with regard to race issues. I have been slightly more aware of language issues and adapted my method of assessment for certain assignments when the number of students whose first language was not English increased.

I have noticed how students of colour tend to stick together in tutorials, unless the student of colour is anglicised. I don't believe in this university department that the different cultures are particularly well integrated. If integration occurs it is probably due to efforts made by the minority student rather than the white majority. I used to feel that the students should be mixed in groups, but I experienced angry resistance from a particular tutorial group and so haven't imposed group structure. I now have mixed feelings/beliefs about mixing groups anyway as I realise now that these students find their self selected groups offer them the support that might be missing institutionally.

The reflection on positionality framework prompted an exploration of the cultural and racial heritage and the historical landscape of the participants in the study. The reflection happened alongside the analysis and after data collection and directs me to literature that will inform me of the cultural, racial heritage of the participants. The L6 leaders who were invited for follow up interviews were in their early twenties. Tina and Yve are both female White British students. Al is a female British Asian and Nat is a male Black African who has been living in Sheffield for several years and completed his secondary and tertiary education here. The women have emerged from an education system that has seen the success of girls improving and overtaking that of boys. In addition all four are from groups that have higher relative initial participation rates in higher education based on ethnic group compared to male white British students (Modood, 2006). However, what all the L6 leaders who were selected for the final interview have in common is that they are minorities in the computing discipline in the UK. They all have to work harder within the system.

The literature selected includes published studies relating to US college students, within the college setting and in unmediated settings and internal studies of SHU students. The US literature suggests that men and women of colour are more aware of racial tensions than their white counterparts in higher education settings (Ancis, Sedlacek, & Mohr, 2000). This 'awareness' was not something that was evident in the blogs or interviews with respect to race or gender in my study. Race appears to be important in online environments and comments (positive, negative and neutral) about race are expressed in unmediated environments (Tynes, Reynolds, & Greenfield, 2004) when no one would appear to be judging. In the UK Gillborn examines the relevance of critical race theory in the UK (2006) and Lall & Gillborn report on problems with culture blind approaches in primary schools how these problems are being addressed (2004). However an internal report for Sheffield Hallam University concludes that most (but not all) ethnic minority students did not perceive race as a major issue of their lives when a sample of 14 students were interviewed by white, female student union officers (Consultation with Black and Ethnic Minority Students, 2003). A later report suggested that issues of culture had arisen for British Asian students (Dhimar & Ashworth, 2004).

The interviews in my study suggest that the L6 leaders are to some extent colour blind. This may reflect their experience in education prior to university and this issue is examined later in Chapter 5.

I had to consider how I negotiate and balance my own interests and research agendas with those of my research participants, which may be inconsistent with or diverge from mine. I allowed the L6 leader's interests and agendas to emerge as my research was seeking to discover not to prove. My methodology allowed the L6 leaders to record what was salient to them. The diary templates provided enabled them to consider what had been successful and unsuccessful in meetings and how they would prepare for their next meeting, but did not suggest the content, or what might be considered successful. The interview prompts included questions about conflict after the blogs revealed that it was happening. A range of reasons for conflict were included in these prompts which allowed for divergence. My original interest was how the L6 leaders used knowledge; however the design of the research allowed the focus to change when the analysis started.

The positionality framework prompts an exploration of what the research literature reveals about the community and people under study. The community under study are members of the NetGeneration. They are the computing undergraduate community and the L4 team members are predominantly young white British men who are able-bodied, whereas the L6 leaders are a more diverse group of students. Both the L4 team members and the L6 leaders are far more immersed in the culture of, for example, chat rooms than I (Evans, Garcia, Garcia, & Baron, 2003) where reference to race is common. Other research suggests that the white majority are less aware of racial tension (Ancis, Sedlacek, & Mohr, 2000). Van Dijk (1992) gives examples of discourses where systematic racism occurs. The community is becoming more diverse. It is possible that this could cause more tension (Chang, 2002). Although what is written is quite depressing it does mean that I have to be aware of the possibility of denial with regard to racism. I need to be aware that I may be a product of the prevailing cultural hegemony and I may have missed instances of racism within teams.

I also need to consider systemic and organizational barriers and structures that shape the community of the L4 and L6 students, locally and more broadly such as widening participation

schemes that may create a more diverse student body. Other structures that shape the student community are those of student support including assessment for learning contracts and who this is available to, along with support for international students. These are enabling aspects of the current system. However, possible systemic constraints have been identified by the university and an examination of some of these have constraints has taken place.

The system for submitting extenuating circumstances has been examined by the university as a potential barrier (Dhimar & Ashworth, 2004) for some students and is discussed in Chapter 5.

> *'Shifting from the self to the system allows researchers to work through the danger of rejecting the permanence and pervasiveness of race and racism because they, individually, do not see themselves as racists or contributors to injustice, inequity, or oppression.'* (Milner, 2007, p. 397)

Other potential systemic constraints that are being examined at present in the university include the manner in which group work is used within a degree course and how peer support is utilized.

Moving the focus from self to system is a very important part of the reflection which examines a system which is created by those in power to reflect their priorities. This will continue until there is *'convergence in interest'* (Milner, 2007, p. 390) between those in power and particular students' needs. The publication of the National Student Satisfaction Survey has prompted a convergence of interest with respect to group work and peer-support. However the nature of the survey – an aggregation of student opinion, based on a limited number of questions, will by its nature reflect the majority view. Whether that produces systemic and organizational barriers to increased diversity in the student body will depend on who participates in the survey and how the data is used to improve student satisfaction.

These reflections give some insight into my world view and how that may influence my analysis. Although the process of reflection is at times uncomfortable, it is valuable because it has brought to the fore, issues that had until this point remained unexamined. The points to consider during the analysis include; my underlying feminist agenda brought again into focus; being a gender minority for a lot of my time when studying and working; having limited contact with other cultures, but an interest in the stories from those cultures; having a past history in helping disadvantaged young people; being aware that the system does not always support them and noting the different cultural influences for me compared with the L6 leaders.

The framework I have used for this reflection works within a phenomenological arena because it prompts the researcher to consider issues of race and culture that may influence the analysis of data collected during the study. Milner (2007) suggests that issues of race should be studied phenomenologically in order to discover the experience of the community from which the research participants come. The reflection has been presented in the methodology chapter because it was undertaken during the analysis stage of the method and supports my methodological approach.

3.7 Ethics

Critical knowledge concerns emancipation and asks questions such as: How do established power structures determine teamwork practices? Tonso (2006) noted that within the

teamwork literature most research assumes individuals are equal but she noted that Sessa and Jackson have shown that;

> *'differences serve as a cue that is used to assign people to positions in a hierarchy of asymmetric power relations' Sessa and Jackson* (1995)

Differences, in the context of my study, include the difference in status between researcher/practitioner, L6 students and L4 students, as well as the differences such as gender, age, ethnicity of the students involved in the study.

Tonso states that although there is a great deal of research regarding behaviours that promote effective teamwork by encouraging full participation, reducing negative behaviours, managing conflict, taking advantage of positive behaviours, dealing with management issues and goal setting, attending to human resource issues and promoting good internal and external relations, most of this research assumes a level playing field. She adds that very little is known about the hierarchies in engineering education and how that may affect everyday learning activities. This statement may apply equally well to the discipline of computing which is where the IS module under investigation is located. Tonso has illustrated these asymmetric power relations in the student groups that she describes in her case studies. In my study I also need to consider the asymmetric power relations between me and the research participants as well as those between the L6 and the L4 students.

A number of ethical issues were considered before my research commenced which related to the care of the L6 peer leaders and the L4 team members as well as the power relations between me as a researcher and the L4 students who would be assessed at the end of the project.

I dealt with the care of the students by ensuring that the L6 leaders were trained and supported during the research and that they were debriefed at the end of the research period. It was made clear to them that sometimes L4 teams fragment and if that happened to the team they were supporting they should not assume that they were responsible for that. Support was in place if this were to happen.

I carefully compared the IS project brief with recommendations for good practice to ensure that the task was suitable and would not in itself provoke conflict or distress (section 2.4, p14).

The power relations between the L4 students and me had to be carefully considered as I was tutor and researcher. To deal with this the L6 leaders were required to use pseudonyms to disguise the identities of the L4 team members in their blog entries and other tutors were used to assign L6 leaders to L4 teams. This meant that during the project, knowledge of the teams and team member identities were restricted to the L6 leaders and I could not match blog entries to L4 team members during the assessment process. The L6 leaders were given face to face training with respect to these issues. I was in weekly contact with the L4 teams that had volunteered to participate and it was made clear to the students when they signed their informed consent forms that they were able to withdraw from the research at any time without it affecting their academic performance and that no data collected by the L6 leaders would be used to differentiate their project marks (the consent form is shown in Appendix K). The research was given ethical clearance by the ACES ethics committee in May 2008.

In the previous sections I have examined phenomenology as a philosophy and a research methodology, explained the development of my own methodological approach and presented a reflection on my racial and cultural positionality as a researcher and educator as a device to increase transparency and awareness during analysis. In this section I have looked at the ethical issues that apply to my study and in the next section I will place the study into an overall framework for research and summarise the chapter.

3.8 Positioning my methodology in the education research domain

I have presented the development of my methodology in terms of phenomenology as a philosophy and as a practical research method. I will now provide a summary which describes the research in terms of ontology, epistemology, paradigm, data, scope, view of human nature and type of methodology in Table 5 on the following page. The framework has been developed and adapted from Cohen, Manion, & Morrison (2000) and Cinderey (2007) to show the relationships between my research and the different research paradigms within education research. The framework presents the subjectivist and objectivist domains followed by an evaluation of the position of my research methodology against each attribute.

	Subjectivist	**Objectivist**	**My Phenomenological Approach**
Ontology	Nominalism (universals are a function of our cognition)	Realism (reality independent of our thoughts and beliefs)	Originally developed to provide a more rigorous, objective methodology (Jennings, 1986) (Paley, 1997), philosophical phenomenology acknowledges both as a relationship between the object/experience (noema eg awareness of consciousness experienced as physical sensation) (Gendlin, 1962) and the subjective apprehension (noesis – interpreted as ... fear/excitement). Laboratory based psychology studies the noesis when a noema is presented (Giorgi A. , 1985) e.g. 2 lines of a known length; which one is perceived as longer. My naturalistic (authentic) phenomenological approach which studies a mix of social and psychological processes examines the noesis and attempts to determine commonalities in the experience. It cannot claim any certainty about the noema and is therefore subjective and nominalistic.
Epistemology	Anti-positivism (hermeneutics, aesthetics, critical, moral, creative knowledge)	Positivism (observation and experiment – empirical, reduced to measurement; scientific knowledge)	(Double) Hermeneutics - I am interpreting written and spoken word of others (Smith & Osborn, 2003). In order to do that I have included my (authentic, but not lab-based) observations as well as published literature that is positivist in nature in order to find out 'what is happening here?' Critical knowledge is also created as I want to improve the experience for students. My study is therefore anti-positivist.
Paradigm	Interpretive studies tend to be anti - positivist	Normative studies are positivist ;rule governed; investigated by the rules of natural science (Douglas, 1973)	Interpretive – the methodological guidance is very light. The unit of analysis is the 'meaning' unit. The analytical tool is the researcher (Giorgi & Giorgi, Phenomenology, 2003).

Table 5 Summary developed and adapted from (Cohen, Manion, & Morrison, 2000) and (Cinderey, 2007) to show the relationships between the present research and the different research paradigms, continued over page.

	Subjectivist	Objectivist	My Phenomenological Approach
Type of data produced	Typically qualitative	Typically quantitative	Written reports and interviews - qualitative.
Scope	Micro	Macro	Micro – four L6 leaders and twenty one L4 students
Human nature	Voluntarism – individuals are agents of their actions (Scott & Marshall, 2005)	Determinism; externally (biological, cultural, economic, history, socio-biology or technology) determined, no autonomy (Scott & Marshall, 2005)	Voluntaristic to a certain extent, but within cultural and psychological limits. For example, the L6 leaders choose how to respond, as do the L4 team members, but their responses may be constrained through lack of experience or knowledge.
Methodology	Ideographic (unique elements of the individual phenomenon)	Nomothetic (general, law-like statements about social life) (Scott & Marshall, 2005)	Ideographic starting point, which tries to move from individual situated descriptions towards more typical descriptions. The positivist literature (group processes and teamwork) does not allow you to predict what will happen in an authentic group – so even though my research is not generalisable, it allows me to discover things about groups of students in my area so that I can improve the experience. Philosophical phenomenology is attempting to be nomothetic whereas Giorgi's psychological phenomenology does not. My version does not make law like statements but looks to improve the experience for those who have difficulties with the present system.

Table 5 continued Summary developed and adapted from (Cohen, Manion, & Morrison, 2000) and (Cinderey, 2007) to show the relationships between the present research and the different research paradigms

3.9 Summary

In this chapter I have examined the methodological choices that have shaped my research by examining phenomenology as an approach to qualitative research, describing how the work of Amedeo Giorgi and other researchers has influenced the development of my methodological approach. I have also examined my own position within the research study and the ethical implications. Finally I have positioned my methodology within the research domain. In the next section I will explain in detail the methods I used to prepare for, and implement the data collection stage of the research.

4 Chapter 4: Method

4.1 Introduction

This chapter will describe the methods used to implement my research which used nine L6 students, trained in teamwork skills, to lead nine L4 teams (42 students in teams of 4-6) over a period of ten weeks holding between 3 and 10 meetings. The L6 students posted a total of 69 blogs, 1 per meeting. Four of the L6 students were invited to follow up interviews which lasted between 1 and 2 hours each. These interviews were recorded and transcribed. The L4 students completed a pre- and post test survey.

My main focus explores the experience of the L6 peer leaders, requires methods that remain faithful to the phenomenological approach outlined in the previous chapter which aims to discover and represent the experience of the participants and addresses the following research questions;

- **What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders?**
- **How do L6 student leaders apply prior knowledge when mentoring cross year peers?**
- **How/when do L6 student leaders seek new knowledge to solve perceived problems?**

The L4 self assessment of skills development is dealt with using a follow up survey and a simple pre-post research questionnaire with the L4 students (Appendix A and B) and addresses the research question;

- **Will 'cross year, small team peer leading' produce a more favourable self assessment of skill development relative to the comparison group?** [16]

The emphasis of this study is on the experience of the L6 leaders and their interpretation of what happened and the skills/knowledge used in the L4 teams they supported over 10 weeks of the first semester of the 2008-9 academic year. Risk management issues are also addressed in this section. The key steps taken to implement the research are summarised in the process diagram Figure 7 .

[16] With respect to this research question I employ an evaluative approach using surveys as data collection tools (Appendix A and B).This approach is similar to many other group or teamwork studies and is not phenomenological. These were self reported, pre-coded surveys which had been developed during preliminary work with the involvement of SHU computing students (Appendix H).

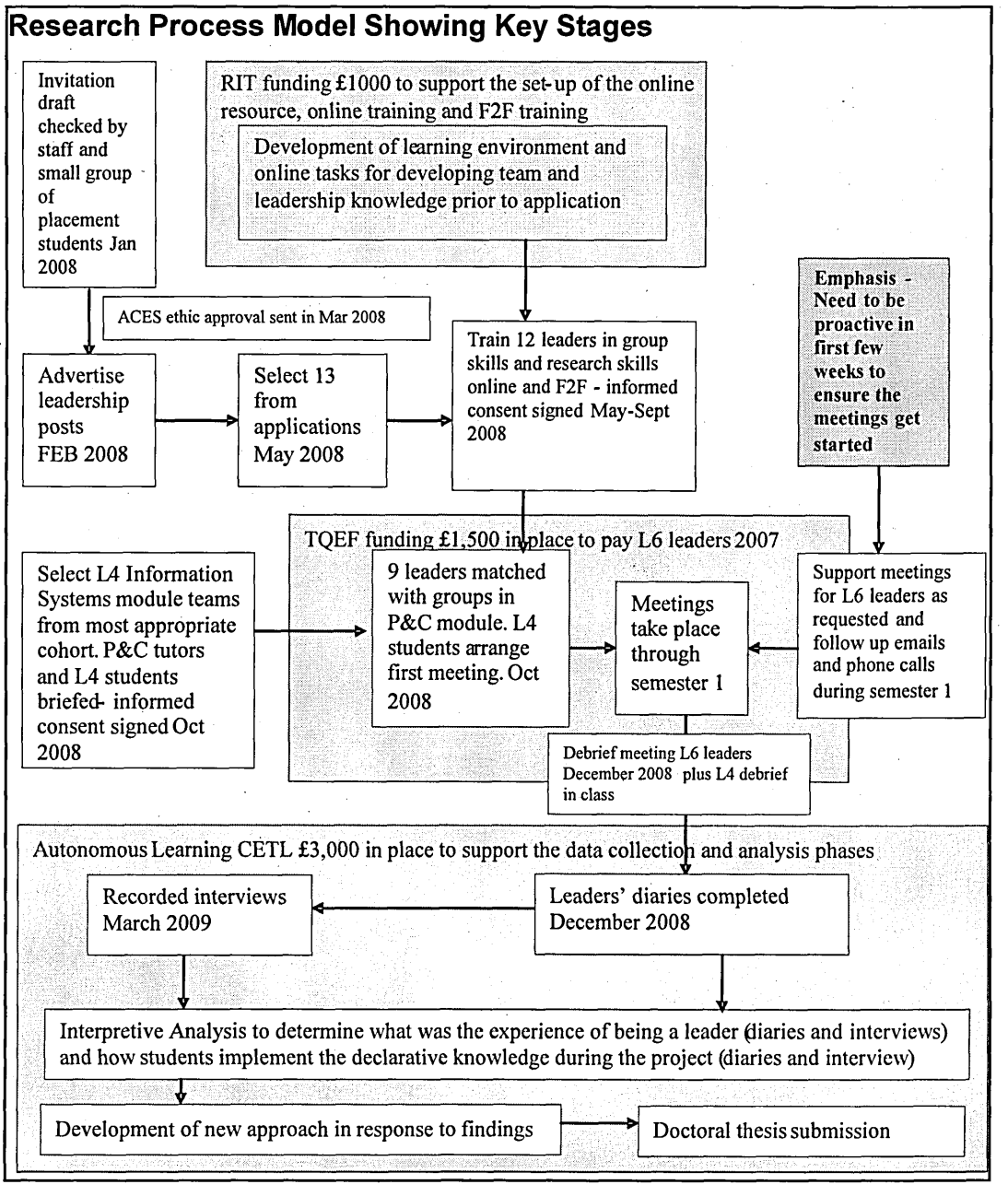

Figure 7 Process diagram showing the key steps in the research set-up and implementation

Figure 7 shows the research process after the preliminary work (which suggested there was a problem in some L4 computing student teams; Appendix A Group work survey; Appendix H Preliminary work focus group). The research schedule, showing estimated and actual dates for the main tasks can be found in Appendix M. The key stages of the process diagram are explained below.

4.2 Recruitment and data collection

In this section I will describe the methods used to recruit level 6 leaders and select level 4 student teams as shown in the process diagram Figure 7, followed by the methods for data collection.

The process started when applications for funding were investigated in September 2007[17]. I needed to ensure that L6 students could be paid for their input because of the high level of commitment to the project required of participants. Once that was in place it was possible to proceed with the study to examine what happens in student teams.

The level 6 students, who would be working as co-researchers and team leaders, were recruited using an email invitation/advertisement sent to 400 students enrolled on the placement Blackboard site (an online managed learning environment) in March 2008. The invitation (which can be seen in Appendix I) was checked by a small group of placement students and the Professionalism and Communication module leader before it was sent to the full cohort. They agreed that the invitation would be attractive to students who are interested in practising leadership skills and participating in research. The invitation included the payment details which allowed students to earn up to £100. Thirteen students responded to the invitation. All thirteen responses were accepted.

For some phenomenologically based research studies this would be seen as a large sample, but because there could only be one start date per year for this intervention a degree of risk management is required to ensure that an acceptable number of students are still participating by the end of the intervention. The sample of students who responded could not be controlled, but was diverse with respect to ethnic group and over represented by women relative to the proportions of women studying computing related subjects in the department (44% of the sample of L6 students volunteering for the research were women, whereas women represent only 10% of the students within the department[18]).

The level 6 students were assigned to temporary virtual teams during the summer of 2008 and given training using online materials before the start of the 2008/9 academic year. The training covered aspects of teamwork and leadership, which they worked on whilst still on placement (Appendix J lists the tasks the L6 leaders were asked to complete). The online learning environment contained a substantial library of published teamwork research, group discussion areas, and group wikis where L6 students posted their completed tasks. I facilitated communication between L6 virtual teams on a weekly basis through May, June and July until placements ended. The L6 leaders were also encouraged to buy a teamwork text book which was written to support undergraduate and postgraduate teams. Twelve of the original thirteen students contributed in some way to this stage of the training. The students were then invited to a face to face, day long training session during induction week. Eight students attended the group training and one other student received the materials in a separate briefing session as they were unable to attend the group training. The training covered aspects related to dealing with groups, setting boundaries, icebreakers, dealing with difficult situations, plagiarism, data collection, naive description, confidentiality and the requirements that needed satisfying from the faculty ethics committee (ethical approval had been granted before training commenced) and the schedule for the day is included in appendix N. At the end of the training day they signed the informed consent form which is shown in appendix K. The training and the informed consent form emphasised the L6 leaders role as co-researchers and the responsibility that we all had for taking care of the participants.

[17] Other applications for funding were made when the opportunities arose.
[18] SI data from 2006/7 showed that the intake for all the computing courses was 90% male and 87% 18-22 years old.

Selecting the level 4 tutor groups to include in the research was more problematic as students were moved between tutor groups and courses right up to the start of the semester. The BSc Computing group was chosen since I required a cohort that would be studying Information Systems and was small enough for me to be able to offer all teams the opportunity of working with a level 6 student leader. Within the cohort there were nine L4 teams, varying in size from 4-6 team members. All L4 teams opted into the research in the week after the briefing session and requested a L6 leader. This was initially eight L4 teams. In the following week a ninth team was formed and the reserve L6 leader was allocated to this team. This ensured that all L4 teams in the cohort were offered the same opportunities for support (Figure 8).

L4 student groups were allocated a L6 leader by the Professionalism and Communication module tutors from a list that I supplied, and given a contact email for the L6 leader. This was after the L4 students had attended a briefing session in which they signed an informed consent form. The L4 students were responsible for making the initial contact with the leaders and suggesting meeting times. The leaders were assigned the pseudonyms Al, Evan, Linus, Lucy, Nat, Nigel, Rob, Tina and Yve.

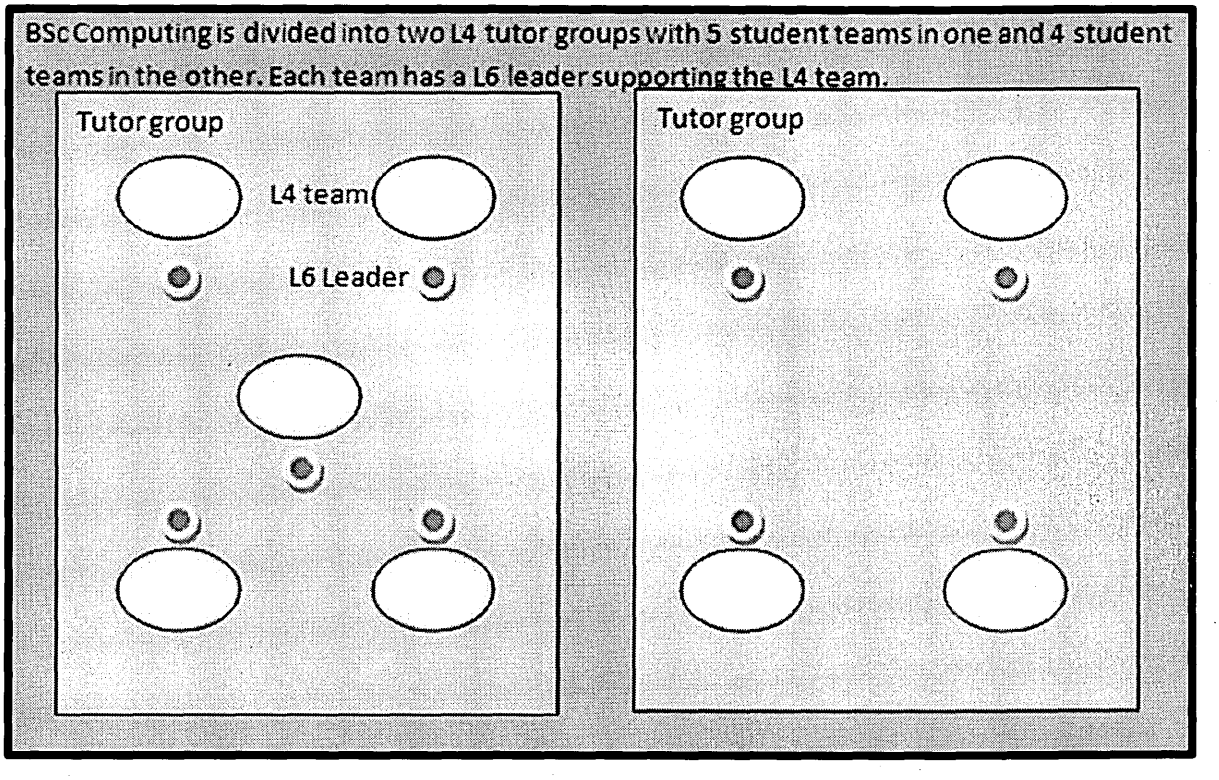

Figure 8 Structure of cohort and allocation of L6 leaders

Meetings commenced mid October 2008 and L6 leaders recorded and anonymised their observations in an online diary format (blog) which was hosted on the university managed learning environment. The leaders were given a template for the blog. The template provided a loose structure around which the L6 leaders could base their thoughts. The leaders were invited to start the blog entry with a one minute free flowing description of their first thoughts on the meeting which allows for pre-reflective, naive description based on Giorgi's (1985) phenomenological approach. This was followed by sections in which the L6 leaders could describe their perceptions of the degree of success of the meeting, their plans for the next meeting and where they felt the team were in the team development life cycle (Tuckman, 1965). The blog postings could only be viewed by the L6 leader and the researcher. The

templates were provided to minimise the risk to the quality and quantity of data recorded and to ensure that the L6 leaders were able to record something, without feeling anxious that they might be recording the 'wrong information'. The loose structure of the template meant that the L6 leaders were still free to emphasise the aspects of their experience that they felt were most salient.

The L6 leaders received payment for the sessions attended. Payment was determined by the number of meetings held and the subsequent blogs posted, which reduced the risk of L6 leaders meeting with the L4 teams but not recording the outcome. Leaders were allowed to hold up to 10 meetings. At the end of the semester the leaders attended a debriefing session with me and were then responsible for debriefing their teams. A debriefing session was also held with the teams in their tutorial sessions.[19]

Four L6 leaders were then invited for follow up interviews which were recorded and transcribed. The L6 students were also paid for attending the interviews. All four leaders accepted the invitation to be interviewed. The interview schedule was emailed to the L6 leaders prior to the interview session. After the session interview transcripts were read by the interviewees and checked to ensure they accurately reflected their experience. The interviewees used pseudonyms when referring to L4 students.

The next section explains how the interview schedule was developed and L6 leaders selected for interview.

4.3 Interview schedule development

Giorgi's phenomenological method of collecting personal accounts is unstructured, based around a single question which then allows the respondent to talk at length. However I felt that time constraints and the limited number of respondents available for this piece of research required the development of an interview schedule. This approach is closer to that of Smith & Osborn (2003) when collecting personal accounts for interpretive phenomenological analysis (IPA). Adopting an interview schedule will allow me to remain faithful to a phenomenological approach without slavishly following a particular phenomenological method and also allows for a degree of risk management. The interview schedule will allow me to focus on the same areas of interest in each interview but allow the interviewee to decide how much detail they wish to include in their response and where the emphasis lies for them. Chapter 3 includes a detailed justification of my chosen methodological approach. Using an interview schedule allows more data to be collected when the time available is limited. The risks at this stage of data collection are due to the fact that the interviewees are facing a number of coursework deadlines for final year assessments and therefore have very limited availability.

[19] The de-brief questions were - What was good about our team? What skills did the team need to improve? What skills did individuals have that contributed to the team effort? What team skills do I personally need to improve?

This section looks at the development of the schedule (which can be seen in full as it was presented to the L6 interviewees in appendix D). Data from the interviews would be supporting research questions;

- **What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders?'** addressed by questions 1-11,
- **'How do L6 student leaders apply prior knowledge when mentoring cross year peers?'** – addressed by question 12 - where they place themselves on the learning gaps matrix
- **'How/when do L6 student leaders seek new knowledge to solve perceived problems?'** – addressed by question 12 – did they cross any learning gaps

When the interview schedule was developed I was already aware of findings by Napier & Johnson (2007) who suggest the gender make-up of a team impacts on team satisfaction, with male dominant teams reporting less conflict than female dominant teams. It is important to divulge pre-existing knowledge for two reasons, firstly because of my phenomenological approach to this piece of research and how it relates to the issue of bracketing, and secondly to avoid asking leading questions in the interview. The L6 leaders reported conflict in their blog entries and I wanted to investigate this further, but it was important that I did not favour gender balance within the team over any other possible explanation for the conflict.

Napier's research, which is based on survey data, does not explain why female dominated teams reported more conflict - Do they have worse team skills? Are they more aware of conflict? Are they less forgiving? Do they provoke conflict by addressing issues that need dealing with? As I am interested in whether this type of behaviour actually happened in the teams in this research, a section of my interview schedule (questions 4-5) focused on what sort of conflict occurred as experienced by the L6 leaders. Prompts were provided to help the L6 leaders categorise the type of conflict occurring – these prompts ask if the L6 leaders thought conflict was socio-cultural or gender related, task related, personality related or had any other explanation. This was done by reading the prompts from the schedule to all four interviewees without favouring any one possible explanation.

The questions about conflict were asked after a warm-up question about how their perceptions had changed during the research (question 1) and whether there had been any barriers to success (questions 2-3) to give them a chance to relax and get used to the recording equipment before the questions relating to conflict were broached (question 5).

The L6 leaders were then asked how they felt the L4 team had progressed (question 6-7), whether any team members needed more attention than others (question 8), what had affected their planning (question 9), what the L6 leaders thought were their most valuable contributions (question 10), if there were issues they did not feel they could cope with (question 11) and a question (question 12) to get them to describe how they had bridged any learning gaps (Light & Cox, 2001). This final question was designed to encourage them to talk about different aspects of learning that relate to how they had prepared for and facilitated the meetings with the L4 teams and supports the research questions looking at what prior knowledge or new knowledge the L6 leaders chose to use in the meetings.

The interviews were scheduled in university meeting rooms, allowing up to two hours for each session. The sessions were digitally recorded. This section has described the development of the interview schedule and how that was implemented. The next section looks at how the final four L6 leaders were chosen from the nine L6 leaders that had facilitated a number of L4 team meetings.

After examining a number of criteria, the leaders who I decided to follow up are those that provided more blog data and provided richer description. They also happened to lead diverse teams in terms of gender or ethnicity or nationality. The L6 leaders were; Nat an African black male leading team with 3 British white female students and 2 British white male students with a female emergent leader; Tina a British white female leading a team of 2 British white females and 4 British white males - where one of the female students emerged as a leader; Yve a British white female leading team of 4 British white males and 1 Arab male (international student) and Al a British Asian woman leading a team of 1 eastern European male (international student), 1 western European male , 1 African male (international student), 1 British white male and 1 British Asian male. All student names have been changed to protect their identity.

Some of the important points to note about this sample are;

- The selection does not represent the percentage of women studying computing, which is much lower than this selection suggests
- There are no British white male L6 leaders in the selection but even though there was greater diversity in the teams in this final selection, British white males still made up the majority of the L4 students in this final selection
- The L6 observations are of diverse teams and so include the interactions between male and female students and male students of different ethnicities
- This selection may bring out key issues that would not be visible unless I had this kind of representation
- The teams represent the different possible combinations of L4 team membership except for all male white British

This selection emphasises the experience of women and ethnic minority students in computing, rather than being dominated by the experience of the majority (18-22 year old, white male).

Napier's research partly informed the decision I made when selecting the sample for interview and the L6 leaders selected had teams with varying levels of conflict. Two of the L6 leaders worked with teams that differed from the stereotypical all male team which is dominant within computing disciplines[20] and all of them had completed nine or more meetings with their teams and recorded blog entries for each of them. This ensured that there was adequate data available from the L6 leaders in the form of naive description in the blog entries and more reflective data from the interviews.

4.4 Summary

This chapter has described the practical steps taken to recruit research participants and to collect phenomenological data during the peer support initiative with nine L6 leaders supporting nine L4 teams over ten weeks. By focussing on four of the L6 leaders I would be

[20] SI data from 2006/7 showed that the intake for all the computing courses was 90% male and 87% 18-22 years old

examining in detail over fifty percent of the blog data recorded (by number of blog entries and by word count) and all four interview transcripts. The remaining 44% of the blog data was analysed as far as dividing into meaning units and commenting on these units, but not used to create maps to show the progress within the team over time. Over 24000 words were recorded in the blog entries and so although the complete data set is available it is not included in the appendix. The next chapter looks at the analysis of the data, the findings and the implications for practice.

5 Chapter 5: Analysis, findings and implications for practice

5.1 Introduction

The previous chapter described the practical steps taken to recruit research participants and to collect phenomenological data during the peer support initiative with L6 leaders supporting L4 teams. This chapter shows how the data were analysed and relates the data to the research questions.

5.2 Methods of analysis

The data was analysed using different methods which varied depending on the method of collection. The L4 survey material was analysed in a quantitative way by aggregating the number of responses that agreed with the Likert style questions. This method of analysis was discussed in detail in preliminary work (Cinderey L. , Researching Professional Practice, 2007). The blogs and interviews were analysed phenomenologically and are presented first.

The blogs and interviews were prepared for analysis by breaking down into meaning units (Giorgi & Giorgi, Phenomenology, 2003). One example of this for L6 leader Tina is shown in appendix E. To develop an overview of events through the 10 weeks of the semester for each team I created mind map summaries of the blog entries for the four students who were selected for follow up interviews. Appendix F shows this step applied to the blog entries made by L6 leader Tina. A number of working documents were produced which examined the accounts of individual L6 leaders, leading to a written summary referred to as a situated level description (Giorgi & Giorgi, Phenomenology, 2003) as it describes the experience of one L6 leader. The situated level descriptions for each of the four L6 leaders are then compared and a typical level description is written, which describes a typical experience.

The following sections present the situated level descriptions and typical level description followed by the findings presented in order of the research questions in Figure 1 p3.

The first example presents the situated level descriptions for L6 leader Tina and is followed by the data. The quotes are shown to support the situated level description and to illustrate the development of the situated description.

This is followed by the situated level descriptions for the other three L6 leaders. A number of themes emerged from the situated descriptions which related to conflict and culture within the team; conflict and motivation due to environmental stress; perception of role and status of the L6 leader; demonstration of empathy by the L6 leader; use of prior knowledge, skills or experience by the L6 leader; seeking new knowledge or skills by the L6 leader .The situated level descriptions were coded with respect to these themes and combined to create the 'typical level description' which is then presented as a summary analysis which draws from the four situated level descriptions.

5.2.1 Situated Level Description - Tina

Some conflict was observed by Tina within the L4 team but no formal complaints were reported to staff by the L4 team. This team consisted of white British male and female students with Tina, a white British female, as L6 leader. The emergent leader who managed the team's day to day tasks was female. Paul and Mel are two of the team members. The situated description is presented in bold and is followed by the supporting data.

In the first meeting Tina reported being slightly nervous initially but her confidence grew after she used an icebreaker game in her first meeting with the team which she had previously known about and used it to emphasise the similarities between the team members.

> *'I was slightly nervous about meeting the group this morning, but I am now confident that we will work well together.'* Tina (Team, 2008, p. 681)

Tina's ice-breaker involved the use of rewards – Smarties – the sort of information that the individual had to reveal about themselves is dependent on the colour of the sweet.

> *'This week I successfully applied my skills/knowledge to help [the team] understand each other's personalities. I did an ice breaker that allowed us all to find out each other's proudest moments, our leisure time interests and why we're all attending university. At the end I summarized what we'd found out and made comparisons between the group members. They all want to achieve the same goal from completing their degree and they all appeared to be good-humoured and easy going.' Meeting 1* (Team, 2008, p. 676)

Tina had well defined boundaries. She noted that she was not seen as a close peer, but as someone with status that is slightly higher than the regular group members. Tina had to restate her boundaries during the semester. This did not adversely affect the group performance.

Tina maintained her boundaries and at times had to restate them to some team members.

> *'We spoke about the work they had been set in IS and discussed my role in the group again as Paul was enquiring what I "could do" for them.' Meeting 2 (Team, 2008, p. 686)*

> *'Some members were discussing other assignments and once again I had to make it clear to Paul that my role in the team was not to provide answers to their tutorial tasks.' Meeting 4 (Team, 2008, p. 703)*

Tina talked about her role in interview;

> *'[The group would] maybe see me as a mentor. I didn't want to be seen as a secondary teacher. [I] wouldn't be helping them with the actual work but with how they should work as a team...The team saw me not as a peer but as an intermediate level. They showed me what they had done -this doesn't happen in a peer group. When you are a peer it doesn't matter what proportion of the workload you have done in respect [to] the amount you wanted done whereas when I came to the meeting it's – 'I've done this, I've done this'. Not seeking approval but checking that they are on track.' (Tina, 2009, pp. 2-5)*

Having to restate her boundaries did not adversely affect the group performance and this was communicated during the debriefing meeting;

'The team members were happy with the preparation that each of their team mates put in for the walk through and believe that they all communicated effectively in the team meetings and during the actual assessment.' Meeting 9 (Team, 2008, p. 737)

Throughout the peer support Tina revised her information systems first year work to help her answer the team's questions. She was concerned about her role in the team and sought new knowledge in the form of team health check exercises to use with the team which she felt then re-established that role. Tina was very focussed on establishing and maintaining her role.

When asked where Tina would place herself on the learning gaps matrix what gaps she was crossing and how she responded;

'Initially 'recall' in terms of revising some of the module work and putting it into an IT context, not just a teamwork one. I'd be moving through the different domains [on the learning gaps matrix] as I met with the students and they had more questions – so that would be 'recall to understanding' so that would have been achieved through the revision of my previous module work, and again that revision would have given me the ability to share my IS knowledge which is 'understanding to ability''. (Tina, 2009, p. 66)

Tina used team building exercises later in the project with the aim to encourage reflection on team processes. These exercises helped the group consider whether they were working as a team and whether they could deal with different personalities in a group. Tina also introduced them to Belbin's role theory. The exercises had not been part of her original plan when she started working with the group and Tina had introduced them when she was feeling that she had no role in this group because they were functioning well. The exercises were well received by the group members and Tina felt that she had re-established her place within the group.

'So seeing their reaction to actually wanting to do the questionnaire really helped me to establish my role again because I could see the benefit I could bring to them by actually doing things like that, [using] those kind of techniques and applying them with them.' (Tina, 2009, p. 50)

Overall Tina reported low levels of conflict in this group but was a little concerned about the interactions between two members of the group. She again sought new knowledge from the recommended text book to introduce exercises to enable the team to examine team issues.

'The members of the group seem to be working well together and attained a high mark on their progress check. I did notice however, that there were light disagreements between Mel and Paul regarding who completed one of the diagrams. I believe that the comments made were in jest, but I will be monitoring them to see if there is an underlying power struggle.' (Team, 2008, p. 707) Meeting 4

'Despite the power struggle that I thought might be occurring last week, all members are showing they have the same goal to reach. The team members all appear to be participating and from what I can tell, there are no "free loaders".' (Team, 2008, p. 714) Meeting 5

'This week I successfully applied my skills and knowledge to help the group understand how to work constructively with team members that they may not necessarily like.

Since I have been unsure some weeks whether the differences between Mel and Paul are serious, I thought it would be a good exercise to do with the group and so we discussed Levin's ideas on how to resolve this issue.' (Team, 2008, p. 728) Meeting 8

Tina mentioned this in interview;

'[The] only other barrier [to success] was the small conflict between two members [Paul and a female in the group Mel] I didn't know if this was just down to Paul's jokey banter. Paul would be quite territorial with his work and be argumentative with this one team member – but it would quickly blow over.' (Tina, 2009, p. 17)

There was no withdrawal within this group and the conflict may have been light hearted banter. This low level 'conflict' occurred across a cultural divide – gender – but Tina did not express awareness of gender based conflict. The report from the debriefing meeting suggested that everyone had been satisfied working in this group and there were no reports to tutors, complaining about the behaviour of group members.

Tina diffused a potential conflict when one group member failed to produce the work assigned to him after a number of weeks. Tina noticed a possible lack of technical skills and dealt with it sensitively. She took an indirect approach by telling a story based on her past experience, which then got the whole group working together on the task rather than leaving it to the one team member. Tina empathised with the student who was not producing the work and took a pragmatic, non-judgemental approach to solving the problem.

Paul had not produced the work required, so Tina recounted an example from her first year group which she described in interview.

'I described the situation in my group [in the first year] with a group member not understanding one of the diagrams. "The group member said she hadn't had time rather than admitting that she wasn't sure how to do it, so it was being delayed week after week. The group eventually realised that she was afraid to voice her opinions so the team decided to go through the tutorial work together so that everybody understands rather than going straight to task delegation. This would highlight any problems that needed to be taken up with the tutor". It was after this [story] that this team [combined forces and] had a group attack on that task and that is when it got done.' (Tina, 2009, p. 9)

Tina noted a lack of enthusiasm from the team around the time of the midpoint formative assessment but did celebrate the high mark that they achieved.

'The atmosphere in the meeting this week was again lacking the enthusiasm that was apparent in the first meetings.' Tina (Team, 2008, p. 702) Meeting 4

The following sections present the situated level descriptions for the other three leaders.

5.2.2 Situated level description - Nat

Conflict was observed by Nat that seems to have created some emotional stress for team members but this conflict was not reported to staff members. This team consisted of white

British male and female students with Nat, a black African male, as the L6 leader. The emergent leader is female.

Nat does not refer to any preparations for this first meeting but is nervous because of the responsibility he feels with his role as a peer leader. He was aware of a difference in status between him and the L4 team.

He did not mention revising technical knowledge or using the teamwork text book. Nat describes relying on past experience and reacting to problems as they arose in the team.

He generalised that other people were sources of new learning through feedback from peers and lecturers. He also felt that thinking and learning skills, along with personality developed as you progressed from first to final year. Nat encouraged the team to systematize the project development process and introduced them to a new way to check and correct project documents before a meeting in order to improve efficiency.

Overall Nat reported two conflicts of significance between two group members. The first reported conflict occurred during a group work session, but was significant enough for group members to discuss it with Nat, when they met him later. The conflict was described as 'heated' and team reported to Nat that one team member had been shouting. The conflicts that were highlighted were across a cultural divide – gender and were centred on the quality of the work that was being presented to the team. The argument was between a male team member who was reportedly shouting at the emergent female team leader.

The second conflict happened in the meeting with Nat as they were rehearsing for their final assessment where they were responsible for presenting sections of the group work. Nat reported that the meeting had to be paused so that he could speak to individuals to calm them down after one student had failed to properly rehearse his section. Two group members, one male and one female, who were present, became verbally withdrawn and stopped contributing. The conflict appeared to be between the same male group member and a female dominated sub-group which included the emergent leader.

Both conflicts occurred just before an assessment. In both cases Nat was able to help them reflect on their behaviour and get them focussed on the task again. Nat encouraged team members to empathise with each other.

Nat celebrated the high midpoint formative assessment mark. Nat had been concerned that the mark would affect the mood of the team but after discovering that they had done well felt it contributed to a drop in motivation for the team.

An act of withdrawal by a female team member was avoided when Nat encouraged the female emergent leader to talk to the team member who had started to opt out of lectures. This successful intervention occurred within the same cultural identity – gender.

Nat encouraged the group to teach each other where there was a lack of technical ability. However, Nat noted that the male team member involved in the conflicts resisted attempts by the rest of the team to get him to re-do work that they did not feel was of the required standard.

Nat felt that he had got more actively involved with the team than he had originally expected. Nat mostly maintained an adult to adult relationship with team members although he occasionally took on a parent role which appeared to be nurturing rather than chastising. Nat encouraged them to try to discover and understand what might be affecting team members when they were not contributing. Nat felt that the team moderated their behaviour less as they expected that Nat would be able to sort out team problems.

Despite the high level of emotion generated within the group, no one made any approach to module tutors complaining about team members.

5.2.3 Situated level description - Al

Ongoing conflict and withdrawal was observed and reported by Al. The blog report did not express the level of irritation with some team members which became more apparent from the interview. One L4 team member complained about another team member to module tutors close to the final assessment date. The all male team was of mixed age and nationality with two home students, white and Asian British, and three mature students all of differing nationality who were EU or International students, and met with Al a female British Asian L6 leader. The emergent leader was a mature male EU student.

Al does not report feeling nervous before her first meeting. She asks them questions about themselves which she refers to as an icebreaker exercise. Al mentions having revised technical knowledge and referring to the teamwork text book but did not attempt to apply any of the exercises.

Al recorded in her blog some concerns about the level of contributions from a particular group member to the group project. She refers to some absences from meetings and suggests that the group wanted to take 'official' action with regard to this which Al supported. The blog entries did not indicate the level of irritation, with regard to particular group members, that became evident later in Al's interview responses. Al's team could have been classed as multicultural. It was the most diverse group with respect to nationality and gender (male team with female L6 leader).

The interview revealed a more complicated group dynamic involving sub-groups which Al labelled at one point as 'older ones' and 'younger ones'. Conflicts within the team appear to have occurred across this cultural divide – age. She also describes conflicts between herself and the sub-group of younger students - she reports in the interview that she is irritated by their behaviour. Al reports that she and some group members were working, whilst the others were not. Work towards the project was conducted within the meetings; this may have contributed to the amount of conflict Al witnessed (the other three L6 leaders used the meetings for project management).

Al appears to have identified more strongly with the sub-group of older students. She encouraged the emergent leader to question the younger students, 'to get answers out of them'; however the approach did not appear to be successful. During some meetings one of the younger students, who missed a number of meetings, would leave early. Al was aware of different priorities for the different sub-groups, which suggests a recognition of certain cultural identities (with respect to age), but not of others (nationality, ethnicity) which existed in the group. An awareness of different priorities did not lead Al to modify her approach to the younger students. The approach was consistent, but Al was aware that it

was unsuccessful. In meeting five, Al deals with this by planning to reinforce the rules of this approach at the next session. It is not known if she does this as there is a long gap between meetings.

Al had originally expected to be viewed by the team as a role model, but felt that the team expected more from her and she described her role as being like a tutor. However, she appeared to become entrenched in a chastising role with the younger students.

When the meetings started again, Al asked if the emergent leader had spoken to module tutors. This was after another unsuccessful attempt to motivate a particular group member. The approach to the tutor occurred one week before the assessment. It was explained that this was too close to the deadline to exclude a group member (week 9/10). Al seems to think this group member, the emergent leader, approached another module tutor earlier but it is unclear as to when this could have taken place. There was a three week gap in blogs prior to the week six meeting.

Al described the group as being at the 'performing' stage of the teambuilding life cycle even though some group members were disengaged. She reports being pleased and surprised by the team's midpoint assessment mark.

There was no acknowledgement by the team or leader that the student who was causing the frustration was possibly lacking technical skills. The emphasis from Al was that this student should go and help the others, rather than investigating if he needed help.

Al reported conflicting statements about the language ability of members of the team, stating at one time that all team members had a good understanding of English in the team setting, and then later in the interview stating that some members of the team were not confident English speakers when presenting.

5.2.4 Situated level description - Yve

Some conflict and withdrawal was observed by the L6 leader which appeared to irritate some team members. The team made complaints to staff about one team member close to the final assessment. The team was all male with a white British majority and a lone ethnic minority international student. The L6 leader Yve was a white British female. The emergent leader was a white British male.

Yve reported being initially very nervous and sensed that the team members were also nervous but after having conducted an icebreaker game felt that the first meeting had gone well. She prepared for her subsequent meetings by revising the module knowledge and practised her communication skills on her final year peers to ensure that she spoke to her L4 team at an appropriate level. She discovered that her own expectations were higher than those of the L4 team. Yve had to stop getting too involved in the project work itself.

Yve reported in her blog the attempts she made to get one of the group members to contribute to the group work activities. This group member had a different cultural identity to the rest of the group and Yve, and withdrew from participating although he attended many of the meetings. Leo's withdrawal or isolation happened across a cultural divide – nationality.

There are similarities between Yve and Al's groups in that the two teams both left it too late to use the yellow card warning system when a team member is not contributing. In this case a number of the group members wished to talk to the module tutor about Leo's lack of involvement. This happened with only a week to go before assessment and the group were told it was too late to remove a group member.

It is again interesting that Yve judges the group to be 'performing' as a team even though one group member is contributing very little. Leo's attendance was not the main issue rather his lack of contribution. Leo's objective test mark on an individual assessment in the module was considerably lower than the test marks for the other group members. This lower level of understanding could have resulted from, or undermined, his ability to engage with the group work. There is no evidence that anyone recognised a lack of technical ability. Yve did not know what language Leo spoke at home or where Leo came from. Leo did not socialise with the rest of the group. By the eighth meeting, Yve felt that Leo did not want to be involved. Yve based this judgement on Leo's body language in meetings. Yve did not identify Leo's behaviour as a source of conflict or consider that he might be experiencing conflict himself.

Yve only mentions one incident that she classed as conflict which involved two of the other group members which flared up because someone had forgotten to bring a document to the meeting. Yve judged the reaction to be out of proportion and assumed something had happened outside of the meeting. The incident was never repeated.

Yve had originally thought that the team would expect her to be like a lecturer but on meeting them she found that they talked easily as they would to another student. Yve acknowledged that the team members listened to her more respectfully than her L6 peers.

Yve was proud of the team's performance in the midpoint assessment and celebrated that, but she also drew their attention to the feedback and emphasised its importance to the development of the project. Shortly after the midpoint formative assessment, Yve reported a drop in motivation and a wasted meeting with the team.

Yve also came into conflict with the group, briefly, when she chastised them for not being more serious about their work close to the final assessment. This could be classed as conflict across a cultural divide – age/gender. This may have been an isolated expression of irritation, but a similar feeling to that which Al had been experiencing for a number of weeks with her younger group members.

5.2.5 Typical level description

The typical level description is created from a synthesis of the four situated level descriptions above. The typical level description improves as more cases are examined and becomes less 'situated' and more 'typical'. The typical level description below brings out similarities and differences in the L6 leader experience of conflict and culture within the team; conflict and motivation due to environmental stress; perception of role and status of the L6 leader; demonstration of empathy by the L6 leader; use of prior knowledge, skills or experience by the L6 leader; seeking new knowledge or skills by the L6 leader.

Ongoing conflicts occurred cross cultural divides (ethnic, gender and age) within the L4 teams. L6 leaders did not articulate this or appear fully aware of this. The level of the conflict varied in the way it was expressed including silence in meetings, 'banter' even 'shouting'. L6

leaders in ethnically diverse teams were not aware of the possibility of communication problems in groups where English was a second language for some team members. In these teams, personality rather than situational factors were reported as the cause of conflict for team members who were culturally different from the majority of the team and situational factors were reported as the cause of conflict for team members who were culturally aligned with the majority.

L6 leaders who did not appear to align themselves with any cultural groups within the L4 teams and demonstrated empathy by encouraging team members to help and support others in the team prevented individual team members from withdrawing even if the team experienced high levels of conflict.

Conflict in teams typically increased as the levels of environmental stress increased just before an assessment deadline. This prompted some team members to use procedures to remove particular individuals from the team but at too late a stage to give fair warning. The L6 leaders noticed a drop in drive and focus from the L4 team members soon after the mid-point formative assessment.

Level 6 leaders tended to incorrectly estimate the expectations of the level 4 group members and the actual role was different from the anticipated role except where the level 6 student had agreed clearly defined boundaries. Leaders who prepared for their meetings felt they had overestimated expectations, whereas those leaders that tended to react to issues in the meetings felt that they became more involved than they expected. Some leaders took on a nurturing parent role and others became entrenched in a chastising role with individuals in the team. One leader maintained an adult to adult relationship with all team members at all times. This seemed to be related to the clear statement of boundaries. Having clear boundaries did not mean that L4 team members felt they were not being supported. The level 6 leaders also identified that they held a different status to that of the L4 team member. They were not equal peers and in some cases were listened to more attentively by the L4 students than they were by their own L6 teams where they were considered equals.

L6 leaders demonstrated different levels of empathy. L6 leaders who demonstrated high levels of empathy for all their team members were able to identify appropriate strategies to ensure that all L4 team members had the skills and support to complete their assigned tasks. Those that empathised with some but not all team members were not able to identify such strategies to help some individuals.

The L6 leaders used different types of prior knowledge. The female leaders talked about technical subject knowledge which they revised. All L6 leaders had prior knowledge of team building strategies such as ice-breaker games, but only two of the female leaders chose to use an ice-breaker game in their first meeting. There was no evidence that the use of an ice-breaker game was effective in building long term relationships in the team, but the use of such a tool may have been significant in promoting a professional view of the L6 leader (and enhancing their status) and signifying the start of a formal team and confirm membership of that team. Only one leader clearly illustrated the use of past experience to influence the team to help a team member complete his task although others pointed to the importance of prior experience.

Only one L6 leader used new knowledge of team building tools in subsequent meetings, and these were considered to be useful by the leader in re-establishing her role in the team and helping to systematise the team building process and were taken from the team text book. Another leader successfully introduced a strategy to support the systematisation of the project process after having noted inefficiencies in the team's current process. This was introduced as an experiment which they could evaluate and adopt for the rest of the project if it was judged successful. A different approach to developing new knowledge or skills was used by one leader when she practised her technical communication skills on close peers before using them with the L4 team. Feedback as a way of learning new knowledge and skills was referred to in general terms by leaders, but only one L6 leader encouraged the L4 team to learn from the midpoint assessment. Leaders celebrated the achievement of good marks but only one leader emphasised the value of the feedback gained from the formative assessment.

Reflective thinking skills are being developed by L6 leaders to varying degrees but developing this skill further could help them to evaluate how effective their approach to support is and consider how other approaches might benefit L4 teams. Some L6 leaders were proactive and anticipated and prepared for meetings, others were reactive and relied on past experience to help them deal with issues. For level 6 leaders who relied on past experience, the quality of the past experience and the quality of the reflection is important in determining how well they can support the L4 teams. An ability to reflect on and evaluate an unsuccessful approach and then seek new knowledge or skills to create a new approach is important for a peer leader.

This section of the analysis applied the phenomenological methodology of Giorgi (2003) along with the critical slant from Smith and Osborn (2003). This resulted in the creation of four situated level descriptions for the L6 leaders which were compared and combined to create the typical level description above.

This typical level description is used in the following sections to support the findings and implications for practice related to the research questions;

- **What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders?**
- **How do L6 student leaders apply prior knowledge when mentoring cross year peers**
- **How/when do L6 student leaders seek new knowledge to solve perceived problems?**

5.3 Findings – What happens in cross year peer led teams

This section relates the typical level description to the research questions.

- **What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders?** This research question is addressed through the typical level description (extract below) with respect to conflict and culture within the team; conflict and motivation due to environmental stress; perception of role and status of the L6 leader; demonstration of empathy by the L6 leader;

Typical level description extract - Ongoing conflicts occurred cross cultural divides (ethnic, gender and age) within the L4 teams. L6 leaders did not articulate this or appear fully aware of this. The level of the conflict varied in the way it was expressed including silence in

meetings, 'banter' even 'shouting'. L6 leaders in ethnically diverse teams were not aware of the possibility of communication problems in groups where English was a second language for some team members. In these teams, personality rather than situational factors were reported as the cause of conflict for team members who were culturally different from the majority of the team and situational factors were reported as the cause of conflict for team members who were culturally aligned with the majority.

L6 leaders who did not appear to align themselves with any cultural groups within the L4 teams and demonstrated empathy by encouraging team members to help and support others in the team prevented individual team members from withdrawing even if the team experienced high levels of conflict.

Conflict in teams typically increased as the levels of environmental stress increased just before an assessment deadline. This prompted some team members to use procedures to remove particular individuals from the team but at too late a stage to give fair warning. The L6 leaders noticed a drop in drive and focus from the L4 team members soon after the mid-point formative assessment.

Level 6 leaders tended to incorrectly estimate the expectations of the level 4 group members and the actual role was different from the anticipated role except where the level 6 student had agreed clearly defined boundaries. Leaders who prepared for their meetings felt they had overestimated expectations, whereas those leaders that tended to react to issues in the meetings felt that they became more involved than they expected. Some leaders took on a nurturing parent role and others became entrenched in a chastising role with individuals in the team. One leader maintained an adult to adult relationship with all team members at all times. This seemed to be related to the clear statement of boundaries. Having clear boundaries did not mean that L4 team members felt they were not being supported. The level 6 leaders also identified that they held a different status to that of the L4 team member. They were not equal peers and in some cases were listened to more attentively by the L4 students than they were by their own L6 teams where they were considered equals.

L6 leaders demonstrated different levels of empathy. L6 leaders who demonstrated high levels of empathy for all their team members were able to identify appropriate strategies to ensure that all L4 team members had the skills and support to complete their assigned tasks. Those that empathised with some but not all team members were not able to identify such strategies to help some individuals.

A number of patterns emerge as I examined what was happening in peer led teams as observed, experienced and reported by the L6 leaders. One pattern that emerged from the maps of the blogs was that all the L6 leaders observed some conflict within the L4 groups and conflict typically increased as assessment deadlines approached. Although this finding is important for understanding the behaviour in teams at different stages of the project a second more significant pattern emerged in the follow up interview when L6 leaders were asked about the possible sites of these conflicts. None of L6 leaders identified socio-cultural or gender as possible sites for conflict even though all the reported, ongoing conflicts occurred across what I perceived as cultural divides. This difference in perception prompted a critical analysis of the data with questions such as - do I have a sense of something going on here that the

participants themselves are less aware of (Smith & Osborn, 2003)? Resolving conflict in diverse teams will be hampered if the L6 leaders are unaware of cultural differences.

Another pattern emerged around the perception of negative behaviours of team members who were not considered to be engaging with the group which were often attributed to personal or internal factors such as personality, motivation or general attitude. From a group process perspective this is characteristic of the attribution of behaviour between in- and out-groups (Brown R. , 1988). This is also significant if the L6 leader became more closely identified with one of the subgroups because members of out-groups were less likely to be integrated back into the team if cultural misunderstandings are dealt with as internal factors rather than situational factors. The different roles adopted by the L6 leaders also have implications for their approach to mentoring the L4 teams along with their ability to empathise with all team members. Both Tina and Nat empathised with group members who were encountering difficulties during the team project whereas some L6 leaders described feelings of frustration when the L4 students failed to engage fully with the project task.

In the ethnically diverse, all male L4 teams with female L6 leaders (Al and Yve) a possible lack of technical ability was not considered to be a factor in the withdrawal of a team member. Yve's team had two technically able group members who could have taken on the role of supporting the weaker member. However the tendency of Yve and the other L4 team members to ascribe internal motivations to Leo's lack of participation meant that this support was not offered. This may again relate to a need to improve inter-cultural sensitivity.

Al appears to have identified more with the 'older members' in her group and attributes the negative behaviours of the younger ones to internal factors – *'not pulling their weight', 'general attitude'*, whereas internal factors for the older group members were associated with positive behaviours – *'wanted to get a good mark', 'focussed on it'*. As Al ascribed internal motivations to the negative behaviour of Brad (one of the 'younger ones'), support to improve Brad's technical skills was not sought or encouraged.

Other patterns of behaviour within the L4 teams which are important in terms of motivation levels were reported, such as how L4 students moved their focus away from the IS team project after successful mid-point formative assessments.

The issues highlighted in the typical level description have implications for practice if we want to support all L4 team members particularly those that find themselves outside the prevailing team culture, whether that relates to cultural aspects of ethnicity, gender or any other cultural orientation, and improve 'what happens in cross year peer led teams'. In the next section, the experiences highlighted in the typical level description relating to conflict and culture within the team; conflict and motivation due to environmental stress; perception of role and status of the L6 leader; demonstration of empathy by the L6 leader are considered in the context of student teamwork research, group process theory and critical race theory.

5.3.1 Implications for practice - conflict and culture; motivation; roles and boundaries

Lone minorities[21] have been shown to suffer academically in some student teams (Shaw J. B., 2004). Manipulating team membership to prevent such problems is in itself problematic in cohorts that are dominated by one cultural or ethnic group. Cultural identities are so varied that it would also be difficult to determine the criteria for a lone minority. Students who are 'different' (judged as a representative, in one social system, of someone with distinctly different group affiliations of cultural significance' (Cox, 1993, p. 6)) may well experience difficulties in student project teams. These difficulties may increase, rather than decrease with time, if groups have no understanding of group processes. Having a more 'experienced' leader supporting the group, does not guarantee that these problems will be avoided. It may help the majority, but in some cases, at the expense of a (ethnic, gender, age) minority within the group. This sort of disadvantage will not show up in aggregated survey results such as the Group Work Survey which is shown in appendix A. Disadvantage of this type has been observed in other research on student teams (Shaw, 2004).

Reporting conflict within L4 groups was not a problem for L6 leaders. Arguments or disagreements were recorded in the blogs or talked about in interview. However there are questions with respect to the L6 leader's perception or awareness of diversity within the L4 groups and the impact that might have on the group processes. The L6 leaders recorded and reported conflict in their blogs and in the follow up interview. They did not express, in their blogs or interviews, awareness of cultural diversity or that cultural diversity (with respect to ethnicity or gender) within their groups could be causing the conflict. The phenomenological approach is concerned with consciousness/awareness of a particular phenomenon and how the participant experiences it. The critical approach to analysis questions the issues in terms of power structures. What this particular section shows is an absence of consciousness/awareness of the potential impact of diversity on group processes, or a reluctance to report cultural diversity[22] (other than age) as a factor in any conflicts. The L6 leaders appeared colour-blind[23] or blind to cultural difference. In some cases this colour- or 'culture -'blind approach may have led to unrecognised discrimination. [24]

This unrecognised discrimination with respect to cultural identity (in this study gender, ethnicity or age) is likely to be wide spread. This has been debated at length within Critical Race Theory (CRT), with respect to ethnicity and education (Gillborn, 2006; Ladson-Billings & Tate, 1995; Ladson-Billings, 1995) and education research (Milner, 2007). Unrecognised or

[21] A lone minority is an individual in a team who did not have any colleagues of the same nationality/gender/age etc in their group.

[22] Originally defined as 'Cultural diversity means the representation, in one social system, of people with distinctly different group affiliations of cultural significance' (Cox, 1993, p. 6). Cultural identities can include job function, religion, age, physical ability, racioethnicity, gender and nationality (Cox, 1993)

[23] ignoring differences (sometimes called a 'colour blind' approach) (Lall & Gillborn, 2004, p. 15)

[24] In this study, conflict based on gender did not appear to be as problematic as ethnicity or age. Although women are a minority group in computing they were not lone minorities within the teams. The L6 leaders of teams with female team members (Tina and Nat) also demonstrated good levels of empathy when dealing with the conflicts.

unintentional discrimination is one of the key tenets of CRT and is considered to be 'normalised' discrimination. Lopez (2003) explained that;

> *'rather than subscribe to the belief that racism is an abnormal or unusual concept, critical race theorists begin with the premise that racism is a normal and endemic component of our social fabric'* (Lopez, 2003, p. 83) .

The key tenets of CRT relate to US society but Gillborn (2006, p. 11) argues that *'CRT can no longer be ignored by the academy beyond North America',* and argues that in the UK;

> *'Conventional forms of anti-racism have proven unable to keep pace with the development of increasingly racist and exclusionary education policies that operate beneath a veneer of professed tolerance and diversity'* (Gillborn, 2006, p. 11)

Adopting a CRT stance means that a new researcher does not have to construct a 'map of evidence' relating to an anti-racist perspective.

> *'At present, there is a danger that each new researcher must "re-invent the wheel" so far as anti-racism is concerned. The lack of a clear and widely understood set of anti-racist perspectives means that each new contributor (scholar, activist, and/or practitioner) must relearn the antecedents of any anti-racist analyses that they wish to develop. This is both wasteful and risky'* (Gillborn, 2006, p. 18)

Gillborn goes onto explain that it is wasteful because each new researcher has to construct a map for themselves as there is no widely recognised anti-racist framework and risky because many original source documents relating to the anti-racist perspective are not digitized and therefore less likely to be accessed by new researchers. By adopting the main tenets of CRT, in this case the tenet that racism is endemic and normalized in society and therefore education, I am able to move towards improvements to practice rather than create my own framework to link US CRT with UK anti-racist research.

This is not to say that there was no attempt to construct such a framework which relates, for example, US research into online behaviour of teenagers in chat rooms (Tynes, Reynolds, & Greenfield, 2004), the behaviour of students in HE in the US (Ancis, Sedlacek, & Mohr, 2000) and the writings on education policy in the US (Chang, 2002) to internal local studies in SHU which relate to race (Dhimar & Ashworth, 2004; Consultation with Black and Ethnic Minority Students, 2003) and may be typical of a large post 1992 UK university.

However, relating aspects of peer reviewed US literature that suggests men and women of colour are more aware of racial tensions than their white counterparts in higher education settings (Ancis, Sedlacek, & Mohr, 2000) to internal SHU studies conducted in part by (white) student union officers that suggest UK HE students of colour are aware of few racial tensions (Consultation with Black and Ethnic Minority Students, 2003), is very difficult. Other internal reports using a British Asian interviewer to interview British Asian students (Dhimar & Ashworth, 2004) did suggest that there are systems in place within the university for 'Extenuating Circumstances' that result in unintentional discrimination (and so are classed as normalised within a CRT perspective).

The Dhimar and Ashworth study did not look at issues specific to teamwork; they examined cultural issues that prevented timely and successful submission of assessment work that were

not accepted as extenuating circumstances by the Academic Appeals Registrar Panel. The analysis of 2000/1 and 2002/3 sets of appeals data indicated that:

> *'There is a strong requirement on students, particularly of Asian origin, that they sacrifice other aspects of their lives to family support in times of crisis.'* (Dhimar & Ashworth, 2004, p. iv)

> *'The requirements of mourning rituals and the concomitant experience of debilitating grief are considerably extended in time, and possibly entail a wider circle of relatives than contemporary white British culture would expect.'* (Dhimar & Ashworth, 2004, p. iv)

These and other cultural issues raised in Dhimar and Ashworth's study which impacted on Asian students' ability to ensure timely submission of assessment work, could impact on teamwork assignments and if not acknowledged, lead to normalised discrimination for some ethnic minority students, particularly when student teams adopt a colour-blind perspective and demonstrate a lack of empathy and understanding with respect to difference.

Obvious acts of discrimination may be easy to recognise and be denounced by the student body but it is normalised discrimination which should be challenged according to CRT and similarly labelled as racism.

> *'It is of central importance that the term "racism" is used not only in relation to crude, obvious acts of race hatred but also in relation to the more subtle and hidden operations of power that have the effect of disadvantaging one or more minority ethnic groups. This is a more radical approach than many liberal multiculturalists are comfortable with. Nevertheless, it is an approach that is in keeping with recent developments, not only in the academy, but also in British legal approaches to racism and race inequity. As I have already noted above, race equality legislation in the UK was significantly amended following the Stephen Lawrence Inquiry. One of the most important aspects of the Lawrence Inquiry's approach to institutional racism is the insistence that we focus on outcomes and effects rather than intentions'* (Gillborn, 2006, p. 21)

By focussing on outcomes and effects we could conclude that Leo (Situated level description - Yve p 59) may have been disadvantaged as an ethnic minority in a majority white, British team. Ongoing observations of teams outside the present research study suggest the withdrawal of lone ethnic minority team members from student teams or conflict with a lone ethnic minority team member occurs sooner and more often than that of white male team members in Information System module teams. Owing to some extent to a colour-blind perspective, ethnic minority students appear to be disadvantaged in some teams.

A colour blind approach to difference is regularly cited as a problem when attempting to develop empathy between cultures (Bennett, 1986; Park & Judd, 2005). To combat the problems associated with ignoring difference, Lall & Gillborn (2004) have reported on methods being used to try and change colour blind approaches in schools in one area of the North East to improve race relations recognising that;

'...targeted action is required to address race inequalities and that ignoring differences (sometimes called a 'colour blind' approach) does not work' (Lall & Gillborn, 2004, p. 15)

A colour-blind approach which does not acknowledge difference means that students are unable to investigate, understand and empathise with difference, and so cannot develop ways to deal effectively and equitably with difference. The project reported by Lall and Gillborn is introducing primary school children to different cultures within the community. Acknowledging cultural difference is the first step along a developmental continuum, moving from an ethno-centric to ethno–relative perspective (Bennett M. J., 1986). Colour-blind approaches in UK based pre-university educational institutions may have resulted in some L6 leaders identifying more closely with an ethno-centric perspective and so one implication for practice is the need to develop intercultural sensitivity in SHU computing undergraduates. Bennett's developmental approach to training for intercultural sensitivity is one possible approach which will be discussed in Chapter 6.

Of course CRT and Bennett's framework for developing intercultural sensitivity are focussing on one cultural identity – that of ethnicity or race. The framework for reflection on positionality as a researcher (Chapter 3.6) based on CRT by Milner (2007) can, according to the author, be adapted for use when researching other cultural identities and we want students to develop the ability to empathise with multiple cultural identities not just that of ethnic group. We want to develop empathy in the team members and the peer leader so that all team members can benefit from the peer support. When peer leaders align themselves with a sub group reflecting the majority culture within the team, members of the minority group are less likely to be integrated back into the team or have their needs met. In doing this they may have unwittingly disadvantaged a minority group member of the team whilst having a positive effect on the majority.

A group process approach to analysis also highlights some interesting points which have implications for practice with respect to 'personality' and how it is emphasised in conflict situations in teams and may lead to unrecognised discrimination. Three of the four L6 leaders emphasised the role of 'personality' in conflict and in some cases dismissed situational factors such as language ability as a possible factor leading to conflict or withdrawal. In the two ethnically mixed teams, personality traits associated with conflict or withdrawal were described in terms of 'lack of motivation'. In one of the gender mixed teams personality was described in terms of 'lack of motivation' for some and 'over confidence' and 'an inability to accept criticism' for other team members. However, in this team the L6 leader also refers to differences in personality in neutral and positive terms and encouraged his group to view negative actions as resulting from situational or external factors – a typical ingroup response and one that is more likely to encourage empathy.

'I'm not the sort of person to instruct the group member to issue a yellow card or go and speak to the tutor and get the other group member kicked out of the group. My advice is always to go and speak to the person first because usually when people behave like this it is because they have personal issues rather than them intending to 'give you grief'. Or they might not even know they are doing it.' (Nat, 2008, p. 58)

One L6 leader did not refer to personality as a factor in conflict. She used illustrations from her own experience where she had learned about the impact of situational issues on the performance of a team member. In this illustration she demonstrated how her team had addressed the situational factors that were within their control to help their teammate through a difficult period. She had related this story to her L4 team which prompted the team members to support a team member.

Negative out-group behaviours are more likely to be ascribed to internal motivations - *'that's just the way they are'* (Pettigrew T. F., 1979) whereas ingroup negative behaviours are more likely to be ascribed to situational factors. Yve, unwittingly, reflected this bias as seen from her comments firstly about Leo, where she ascribes the behaviour to internal factors;

> *"I think it was personality and I don't believe that he struggled with the language. He could speak English perfectly well."' (Yve, 2009, pp. 16-21)*

And later about two of the ethnic majority members who had an argument about a missing document.

> *'There was obviously something behind that for these two members that was nothing to do with the group work that we were working on, but was from outside, and I had to step in and say "Calm down, that's not what we do here"'. It was probably a hangover or something'* (Yve, 2009, p. 43)

Leo's negative behaviour was ascribed to internal motivations, whereas the behaviour of the other two students was ascribed to external factors indicating that Yve saw Leo as a member of the out-group. Yve may have over looked external factors which could have been barriers to Leo becoming an effective member of the team.

The implication for practice here relates to the emphasis on personality (internal factors) and the individual, which is prevalent in some western societies, and how that distracts from a shared responsibility for, and ability to influence, a given situation. The use of personality tests (Myers Brigg Type Indicator as discussed in 2.4.2 Individual-Level Factors) prior to team formation may need to be examined. By linking team performance with personality types we may be indicating to students that personality is the most important factor. Some students may assume that 'results' from the personality test are fixed and that personalities do not change and that they as team members have no responsibility for any factors which might improve team performance. Increasing student awareness of their responsibility for developing the team, recognising their contribution to the group culture and how that, and situational factors might affect others in the team may help to remove the focus from 'personality' and encourage a more empathic approach within the team.

Moving onto some of the operational issues in the teams there are other implications for practice with respect to the negative effect the progress check (midpoint formative assessment) has on L4 team motivation. To maintain drive and focus after the midpoint assessment Tina introduced a team health check questionnaire from the teamwork text book and concluded that the team was more alert for that session than previous sessions.

> *'I used Levin's questionnaire to let them think about whether they were working as a team. It was interesting because they seemed to really enjoy being given the quiz. They*

were keen to get the results. It was clear that they actually knew before they got the results, that they were working as a team.' (Tina, 2009, p. 30)

This was a successful strategy for Tina's team which allowed them to reflect on their team performance up to the midpoint progress check and refreshed them for the work leading to the final assessment and is something that could be adopted by all peer tutors to help the team through the dip in motivation after the mid-point formative assessment.

Moving on to roles and boundaries, managing L6 expectations during training will help to reduce the degree of nervousness experienced by the peer supporters before the first meeting. Having clear boundaries and a well defined role helps to do this. Encouraging L6 leaders to consider roles and boundaries before they start the peer support is already part of the training but it was something that was applied differently by the L6 leaders. Illustrating the benefits of adopting sensible boundaries, through stories about/from previous L6 leaders would help to emphasise the importance of this stage of the training.

In summary, developing intercultural sensitivity between student team members and between peer tutors and team members should enable the development of empathy. This in turn should reduce discrimination with respect to different cultural identities which occurs within some L4 teams, and may help team members to identify a variety of needs which when met will enable the team to function more effectively. Recognising difference in neutral or positive terms may allow team members and peer tutors of culturally diverse teams, to identify strategies that will help a team to work effectively.

In terms of operational issues, team health checks may help to motivate teams during the project, as well as address some of the cultural issues identified. The value of role clarity as part of the team process needs to be investigated during training.

The next section examines the findings relating to the second research question as presented in Figure 1 p3.

5.4 Findings - How do L6 student leaders apply prior knowledge when mentoring cross year peers?

This section looks at what prior knowledge the L6 leaders chose to use when working with the L4 teams and addresses the research question;

- **How do L6 student leaders apply prior knowledge when mentoring cross year peers?** This research question is addressed through the typical level description that relates to use of prior knowledge, skills or experience by the L6 leader;

It includes how the L6 leaders chose to approach their first and subsequent meetings with respect to the revision of technical knowledge, team building materials and the application of past experience to gain support for a struggling team member.

Typical level description extract - The L6 leaders used different types of prior knowledge. The female leaders talked about technical subject knowledge which they revised. All L6 leaders had prior knowledge of team building strategies such as ice-breaker games, but only two of the female leaders chose to use an ice-breaker game in their first meeting. There was no evidence that the use of an ice-breaker game was effective in building long term

relationships in the team, but the use of such a tool may have been significant in promoting a professional view of the L6 leader (and enhancing their status) and signifying the start of a formal team and confirm membership of that team. Only one leader clearly illustrated the use of past experience to influence the team to help a team member complete his task although others pointed to the importance of prior experience.

The L6 leaders approached the preparation for meetings differently. Tina, Al and Yve all talked about revising and renewing their technical knowledge of the information systems module. Yve also made reference to other modules that she felt were relevant to her peer leading activities. Nat made no mention of revision. Nat explained that he was reacting to things as they happened in the team meetings and applying past experience to advise them;

> *'I was operating at the recall level every week with the group because a lot of things were happening with the group that I had been through in the past. It helped me to advise them as I thought about how I had dealt with it then.'* (Nat, Teamwork Research Interview, 2009)

Most L6 leaders reported feeling nervous before the first meeting. Tina and Yve prepared an ice-breaker game to use at this first meeting.

> *'I was slightly nervous about meeting the group this morning, but I am now confident that we will work well together.'* Tina (Team, 2008, p. 681)

> *'[Initially I was] very nervous, I felt a little unprepared...As it turns out the meeting went very well and served its purpose as an ice breaking meeting.'* Yve (Team, 2008, p. 742)

Nat, although also nervous, does not refer to any preparations or use of prior knowledge or experience.

> *'I was very nervous to start off with, I guess the idea of being looked at as a leader or a reliable point of contact scared me a little bit, but once I introduced myself and started talking to them, I realised all I had to do was be myself.' Nat* (Team, 2008, p. 421)

Al did not refer to any feelings of nervousness.

> *'The meeting started off with a short ice breaker exercise, so I can get to know them a little. Asked questions e.g. what they were doing prior to coming to university, where they are from and what made them chose this course. This got all of them talking and lead to finding out what kind of people they were in terms of getting involved in the conversation'. Al* (Team, 2008, p. 3)

The L6 leaders had been introduced to ice-breaker activities in their first year induction and so were familiar with their use. 'Ice-breaker' is a term used to cover many different types of exercise, but these are usually exercises or tasks that are secondary to the tasks of the project team. They may be problem solving tasks, getting to know you tasks, or learning tasks and are used to help develop cohesion or to learn about aspects of team working. They are used mostly by teachers and trainers when new groups are formed (O'Rourke, 1999).

The text book recommended to the L6 leaders (Levin, 2005) also referred to the need for some type of ice-breaking activity at the start of a team project. Levin talks about the importance of

'creating a social infrastructure, a network of human relationships that will underpin your project work' (Levin, 2005, p. 28) and advises that groups take time to get to know each other rather than rushing to start the project task. He does not, however, recommend specific icebreaker exercises. Al, Tina and Yve all reported using this book at some point in the project (Al, 2009, p. 152; Tina, 2009, p. 46; Team, 2008, p. 753).

The L6 leaders were all introduced to the idea of ice-breaker activities in the training prior to the start of the teamwork research, but it was specifically in the afternoon face to face session that ideas about different ice-breaker games were presented. One hand-out which accompanied the session included the coloured Smartie activity. Eight of the L6 leaders were at this session including Al, Nat, Tina and Yve. The L6 leaders therefore had significant prior knowledge of ice-breaker activities. However, not all L6 leaders reported using such activities in the first meeting. Tina and Yve took the idea of an ice-breaker game and used it with their teams. Al and Nat did not choose to take up the idea of a game although Al classed her introductions section of the first meeting as an ice-breaker.

Nat did not use an ice-breaker game in his first meeting. After doing 'round table introductions' his emphasis was on task and teamwork related issues. Nat had not forgotten or dismissed ice-breaker activities entirely and was considering them for future team building and wrote at the end of his first blog entry;

> *'To prepare myself for the next meeting I will consider introducing group ice breakers that would encourage them to work together and look after each other's interests in the group'* (Team, 2008, p. 438)

The types of activity that are classed as ice-breakers are quite varied. Simple ice-breakers as employed by some L6 leaders in the first meeting, work as a structured way to encourage groups of people to talk and get to know each other. They are not usually dependent on the skills of the leader or facilitator (Tichon & Seat, 2004). However, some activities described as ice-breakers can be quite complex and sophisticated and provide experiences for the group to reflect on (Hughes, 2002). These exercises may take most of a session and could be better described as tools for learning or reflection. This may be the type of exercise that Nat was referring to. However, Nat did not return to this idea in subsequent meetings. Had he done so, he may have minimised some of the volatile exchanges that occurred between L4 individuals in his team.

The use of an ice-breaker activity did not build long term relationships and this was demonstrated by Yve's team which had one team member, Leo who participated in the ice-breaker, but was increasingly withdrawn in later meetings.

> *'At the first meeting everyone was a bit quiet, so we did the icebreakers and they opened up a bit more and became more receptive, a bit like the first day at school – 'I'm nervous and I'm just going to sit here and say nothing'.' (Yve, 2009, p. 29)*

When asked if Leo was participating at that stage, Yve's response was;

> *'Yes he asked me questions about my placement. So I didn't notice anything out of the ordinary because when I arrived, the group were all sat talking to each other anyway.'* (Yve, 2009, p. 34)

Leo's participation in the ice-breaker did not lead to deeper relationships with the rest of the team.

Other successful uses of prior knowledge in the form of past experience were employed to help L4 team work effectively. Both Tina and Nat noticed that tasks were not being completed in their L4 teams and identified a possible lack of technical ability as a problem for some individuals and encouraged team members to deal with the issue. Two different approaches were successful;

a. Where the weaker team member was male an indirect approach to eliciting whole group support was successful (Tina, 2009). In this case Tina recounted a past experience of her own teamwork that had enabled them to support a team member and get the project moving.
b. Where the team member was female, direct one to one support between team members was successful (Nat, 2009).

This happened in the L4 teams with male and female team members and a female emergent leader. Using a mixture of empathy and past experience, Tina and Nat had been able to identify appropriate support strategies and encouraged the sharing of knowledge between L4 team members.

5.4.1 Implications for practice

With respect to team building, the findings raise a number of questions as to who might benefit from ice-breakers or team building activities – the L4 team or the L6 team leader.

There are a few research studies on the use of ice-breaker exercises (Boyer, 2006; Henson, 1997; O'Rourke, 1999; Tichon & Seat, 2004; Trust, no date). Student motivation has been studied through ice-breakers (Clear & Kassabova, 2005). However most of the discussion on ice-breakers consists of opinion pieces. Ice-breakers can take the form of simple introductory exercise or games or more complex exercises to develop aspects of team building.

According to Henson (1997) Ice-breakers can be used to encourage students to interact, communicate and build trust. However, in the absence of more evaluative evidence I would ask are simple ice-breakers too superficial to build trust and can they really be a short cut to developing trusting relationships? Is the simple ice-breaker merely part of an emerging etiquette when bringing together groups of new people; something to fall back on if the spontaneous social processes are not so spontaneous; something to help the group through those first few minutes of introductions? The ice-breaker game used by Tina and Yve may have helped to alleviate their initial nerves when meeting the team. It may be the case that with small groups of six or less a formal ice-breaker 'game' isn't sufficient to build trust in a team and that unmediated social processes that happen spontaneously are more likely to allow relationships to be built. It is therefore important that peer leaders are aware of the possible limitations of ice-breaker games and should not rely on such activities for building longer term relationships.

A more developed body of literature that I want to refer to with respect to the first meeting is the large body of literature relating to the group process perspective, a perspective which has

been under examination since Sherif (1936)[25]. One aspect of group processes that has been studied is the confirmation of group membership or types of initiations that often mark the entry into a group. Moreland & Levine (1982) identify a number of group initiations. These initiation ceremonies may be based on favourable treatment (benefits that are part of the membership, celebrations) or unfavourable treatment (such as the initiation ceremonies for North American college fraternities) and tend to occur in established organisations or formal groups. This type of initiation is less common within friendship groups. From this perspective an ice-breaker game may operate as an initiation into a formal group. Yve's icebreaker – two truths and a lie – mimics an initiation ceremony and works to formalise the group, taking it from a peer group which was formed from a new friendship group into a more formal working group. Tina's ice-breaker involved the use of rewards – Smarties – the sort of information that the individual had to reveal about themselves is dependent on the colour of the sweet. Both of these activities could encourage team members to reveal more intimate or embarrassing information than a general introductory chat and so bind the group members more closely together.

An additional benefit may be that a structured approach to getting to know group members in their first meeting led the L4 students to view the L6 leaders as being different; more professional than theL4 team members themselves. It is therefore important that peer leaders understand that structuring their first meeting can improve their status and professionalism and that ongoing team building may not improve objective outcomes but can improve satisfaction within the team.

In summary I suggest that there is as yet little evidence that an ice-breaker exercise improves the objective group outcomes for small groups that meet face to face for medium term projects and that it is unlikely that the simple 'get to know you' ice-breakers develop relationships to any great extent and so for a mid to long term project is unlikely to impact on the subjective group outcomes. However the ice-breaker activity may be useful for alleviating initial nervousness, confirming group membership and elevating leader status.

For level 6 leaders who relied on past experience, the quality of the past experience and the quality of the reflection is important when it comes to supporting the L4 teams

5.5 Findings - How or when do L6 student leaders seek new knowledge to solve perceived problems?

This section looks at what new knowledge the L6 leaders chose to use when working with the L4 teams and addresses the research question;

- **How/when do L6 student leaders seek new knowledge to solve perceived problems?** This research question is addressed through the typical level description that relates to seeking new knowledge or skills by the L6 leader.

This section examines the L6 leader's perceptions of their learning during the peer support activities along with the quality and degree of personal reflection by the L6 leaders.

Typical level description extract - Only one L6 leader used new knowledge of team building tools in subsequent meetings, and these were considered to be useful by the leader in re-

[25] and his experiments on groups using an optical illusion called the auto kinetic effect

establishing her role in the team and helping to systematise the team building process and were taken from the team text book. Another leader successfully introduced a strategy to support the systematisation of the project process after having noted inefficiencies in the team's current process. This was introduced as an experiment which they could evaluate and adopt for the rest of the project if it was judged successful. A different approach to developing new knowledge or skills was used by one leader when she practised her technical communication skills on close peers before using them with the L4 team. Feedback as a way of learning new knowledge and skills was referred to in general terms by leaders, but only one L6 leader encouraged the L4 team to learn from the midpoint assessment. Leaders celebrated the achievement of good marks but only one leader emphasised the value of the feedback gained from the formative assessment.

Reflective thinking skills are being developed by L6 leaders to varying degrees but developing this skill further could help them to evaluate how effective their approach to support is and consider how other approaches might benefit L4 teams. Some L6 leaders were proactive and anticipated and prepared for meetings, others were reactive and relied on past experience to help them deal with issues. For level 6 leaders who relied on past experience, the quality of the past experience and the quality of the reflection is important in determining how well they can support the L4 teams. An ability to reflect on and evaluate an unsuccessful approach and then seek new knowledge or skills to create a new approach is important for a peer leader.

One L6 leader used exercises in meetings which she took from the recommended text book. Tina sought new knowledge in the form of team building exercises which she used later in the project with the aim of encouraging reflection on team processes. These exercises helped the group consider whether they were working as a team and whether they could deal with different personalities in a group. Tina also introduced them to Belbin's role theory. The exercises had not been part of her original plan when she started working with the group and Tina had introduced them when she was feeling that she had no role in this group because they were functioning well. The exercises were well received by the group members and Tina felt that she had re-established her place within the group.

> *'So seeing their reaction to actually wanting to do the questionnaire really helped me to establish my role again because I could see the benefit I could bring to them by actually doing things like that, [using] those kind of techniques and applying them with them.'* (Tina, 2009, p. 50)

This comment reveals that Tina was concerned about her role as a L6 leader and would seek new knowledge to enable her to maintain her role. Tina also systematised the team development process with her use of questionnaires and exercises.

Nat sought new knowledge through experimenting with new processes after observing how inefficient the team's current project processes were;

> *'They set up a process where tasks were allocated and then group members went away and did the work. When they met up they commented on each other's work. I noticed that this was taking up a large proportion of the meeting time, and they were picking up on mistakes that could easily be picked up and corrected before the meeting. I thought they could use their time more effectively. I suggested that for 2 weeks they*

try a different approach which required them to circulate their work and get comments back before the actual meeting. I said that if it worked to their advantage they could adopt the new procedure, if it didn't they could go back to the original method. After the two weeks, the approach was seen as successful and was then continued.' (Nat, Teamwork Research Interview, 2009, pp. 25-28)

Nat helped the team to systematise the project development process.

Al was not as open to change and did not seek new ideas or approaches. She was consistent in her approach to Brad (one of the younger team members) and continued with the approach even when she herself saw that the strategy was unsuccessful. She would say things like;

'"The rest of the team are doing some work why don't you see what they are doing and see if you can help them out with it, so that you at least can say you've done a bit of work? It would lessen their burden of the task as well." But [Brad] wasn't really bothered about it at all. He was supposed to be the minute taker – he didn't even do that. So it was really frustrating. I didn't like it at all. It's a group assignment and I feel all members should participate in it. What's the point if you aren't going to pull your weight and expect the results at the end?' (Al, 2009, p. 53)

'I would actually pester [the younger students] – get the leader to question them as well as myself and try and get some answers out of them. But they wouldn't communicate back. They said things would get done but they wouldn't help the team members.' (Al, 2009, p. 131)

'I was kind of nagging [Brad], but then I thought that's not working anyway, so: if I had pushed him a bit more he might have [got more attention]' (Al, 2009, p. 105)

Al was able to acknowledge that the strategy was unsuccessful, but unable to change her strategy. Learning about other approaches to peer leadership including how others were systemising processes and empathising with team members may have helped her to choose a different approach.

A schema of learning gaps developed by Light & Cox (2001) was used as a prompt to allow the L6 leaders to talk about different experiences of learning during the peer support study. The schema of learning gaps was developed to show possible types of learning and the learning theories that support them. In my study, the schema was used as a prompt to allow the L6 leaders to reflect on the different aspects of learning they had experienced during the peer support study. The L6 leaders were asked to explain how they had bridged the gaps between each level of learning.

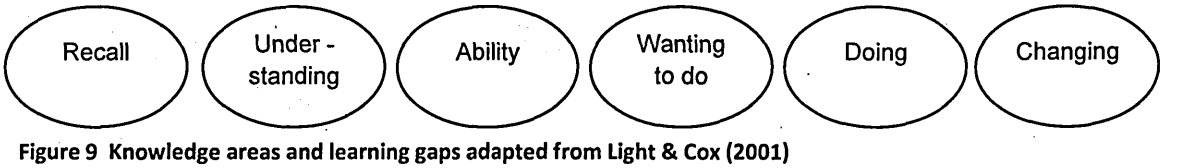

Figure 9 Knowledge areas and learning gaps adapted from Light & Cox (2001)

Talking through the learning gaps schema with Yve she explained how she revised the technical knowledge she felt she needed and how she had considered the different contexts in which she had been working and learning;

'When I started I wanted to help them, but before I could help them I had to recall [technical IS material that] I learnt in the first year and try and understand it, try and put it back into the context of university work rather than placement work and once I'd done that I would be 'wanting to' help them.'

Yve annotated the diagram as she spoke marking recall, understanding, feeling that she had the ability and then 'wanting to do' sections of the schema. Yve initially felt that moving from 'wanting to do' to 'doing' was the most difficult step but that after meeting her team she felt she had overestimated their expectations of her.

'Actually 'doing it' was initially difficult because I hadn't done the recall loop, but after I had done that and knew what they expected of me I found that 'doing it' was much easier. I discovered that I had higher expectations of myself than what the group actually wanted from me so the doing was actually easier than any of [the other stages] in my opinion.'

Yve spoke at length about the 'changing' section on the schema. She talked about how the experience of being on placement had changed her as well as how she had changed her approach to the peer support;

'As for changing, I only changed a small amount and that was in how I communicated to [the L4 team]. On placement I learnt to communicate with people with different levels of understanding, but when you come back to university and start talking about more technical stuff, although you know they are being taught it they might not know what you are talking about, because as a final year student you've had another year on top of that, so I had to change the way I worded things, so that it was still technical, but easy technical rather than database systems 2nd year level technical. That was the only changing that I felt I had done, however if I had been working with a different group then maybe I would have changed more. But they were a quite laid back group.'

'[My placement] influenced the way I explained things, but it was at the 2nd group meeting that I realised I had to change the way I spoke about things otherwise I would confuse them. For example they might know what an entity is, but they might not understand 3rd normal form and I felt I might end up confusing them.'

'I think I changed at two points and went through the 'wanting to do', back to 'recall' and back twice. The first one was during the training for the research and I had to recall what it was like being at university, and understand what was wanted of the leaders and then wanting to do. The second was preparing for the first meeting and having to get back into the IS work to understand it, get the ability back, still wanting to help them, and then do it. Each time I went through the loop I had to change, from placement to university, then changing how you explain things for the different audience.'

Yve emphasises that she felt the biggest learning gap to cross was from wanting to do to actually doing;

'I think I crossed all of the gaps, the only one I felt was the biggest gap was from wanting to do it to actually doing it because I didn't know what was expected of me.

You can be fully committed to helping someone but until you meet them and find out what they expect you can't do that and you can't go into this in one frame of mind and not be prepared to change it.'

To reduce the size of this perceived gap, Yve practised her skills in a safe environment;

'I was concerned what the group would think of me. So I practised my communication on some friends and attempted to explain some IS work to them. These were fellow final year students who had also studied IS (but only at level 4) two years ago and had forgotten – this was so that I could check that I wasn't being too technical.'

Yve considered the amount of feedback from the team to be an indication of whether she had explained things at the right level for them.

'When I went back to the group I was very aware of the group's reactions to things that I was saying and then judged from how many questions they asked, whether I had covered too much. They only asked two or three questions and that was because what I had said had conflicted with what had been said in a lecture'.

Yve's main concern was with technical issues but on reflection felt she had been more concerned than had been necessary;

'As the meetings progressed I had to revise more of the first year work, initially I had only needed to review the DFD models, I then had to look at IFD models, data stores, and entity relationship diagrams.'

'I worried about my ability to explain technical issues and spot technical mistakes, but found that I hadn't needed to any way as the first year group had a good understanding of it any way all I needed to do was look at a DFD and see if the flows connected up sensibly.'

'The outcome of the attempt to bridge the gap ['wanting to' to 'doing']was that I had worried too much and done too much looking back over work – I had spent quite a lot of time doing this.'

Yve had to stop getting too involved and thought about how to limit this involvement and ensure that the responsibility for the work remained with the team.

' I stopped myself from looking at the actual case study so that I didn't try to apply the techniques because I would start to notice the mistakes in understanding the case study which I saw as the group's responsibility to check, not mine.'

'The outcome was that I did it and the group got a good mark and at no point did the group say I had explained too much and baffled them. I think the outcome was good all round.' (Yve, 2009, pp. 100-122)

This was one approach to preparing for peer support meetings and clearly shows how Yve had sought to develop communication skills and an awareness of the L4 teams level of understanding.

Nat's approach was different. He identifies other people as being a source of new learning;

'I might not have dealt with it in the right way but over the years I've been able to learn from my mistakes and improve [by] learning from feedback from peers and lecturers.'

Nat explains that feedback prompted understanding and that failure motivates him to do better.

'This moved me to a level of understanding. Understanding where you have gone wrong almost gives you the motivation to do better. It puts you in the frame of mind to want to do the right thing and that gives you the ability to do what needs to be done. It helps you to plan out a lot better.'

Nat didn't recognise a separate stage of wanting to do, and felt that if you had the ability, you would get on with 'doing' something.

'If you've got the ability you will do something. It might not be the right thing but you go back [points to recall] if your understanding is not what you thought it was, you have to re-evaluate your ability and start again.'

When asked if any of the team work activities had prompted change, Nat explained how he had to adapt to different contexts. Nat also indicated that he felt a large degree of responsibility for the L4 team;

'Quite often you have to adapt how you approach tasks e.g. working as a team leader with first years and working in your own group are completely different groups which have to be approached differently - the first years need more of my attention because they are banking on me being able to help them whereas working with the final years we're all at the same level we've got the same level of understanding we are trying to work together and collaborate rather than one person leading the group and trying to organise things.'

Nat indicates that he believes thinking skills, learning skills and 'personality' are developed as you progress towards the final year of study;

'Until you get to the final year you haven't just developed the way you think but your personality and learning skills have improved dramatically too. You then don't have to go round the loop [recall, understanding, ability]because you have so much experience that there is only one way forward [jumps from wanting to do to changing]. You are constantly adapting... 'wanting to do' and 'doing' are quite different and you can't change without having done it first. The changing part of the schema is for me like final reflection. There is a lot of this 'changing' happening in the final year. It isn't very common in the first year but to get the high grades in the final year you have to change, be adaptable.'

'In the first year you go as far as 'doing' and then that's it. But in the final year to improve you have to reflect. It is a shame because that process is a key process. It's a valuable process - final year students working with first years. It should be taken up by the university and used more widely.' (Nat, Teamwork Research Interview, 2009, pp. 79-102)

The findings show that there are different approaches to preparing for meetings. Both of the L6 leaders, Nat and Yve, were highly motivated students who achieved top degree classifications in their own studies. They had been very involved in the peer support for the L4 students but had very different focuses. Both L6 leaders recognised that context was important when working with other students as well as being adaptable. Yve's approach was proactive; she considered what might be required and prepared for it. Tina had demonstrated a similar trait and sought out material to use with her team. Nat's approach was reactive, relying on past experience, thinking on his feet in the meetings. Al found reflecting on her learning more difficult and spent time deep in thought about the questions in interview. She reported that she relied on a mixture of experience and referring sometimes to text books. She talked more about the qualities of the team members than she did about personal reflection. She had decided that her approach was not working but did not identify any other possible strategies. Providing an environment or framework for reflection may have helped Al.

The importance of feedback in terms of learning was emphasised by Nat, but interestingly L6 leaders reports' revealed the emphasis they had placed on the numerical value of the L4 teams' mid-point assessment grade rather than the usefulness of the formative feedback. Yve had been the only leader to emphasise to her team the importance of the feedback.

5.5.1 Implications for practice

Tina used team building exercises with her team which appeared to be successful. There are a number of research studies on how teams are established and one large scale meta-analysis by Salas, Rozell, Mullen, and Driskell (1999) examines a number of them. Although team building literature often emphasises the need to build good relationships, it is not clear to Salas et al (1999) that concentrating on developing relationships objectively improves team output. In their meta-analytic investigation of team building activities they found little supporting evidence for such an idea. However, Salas et al (1999) note that participants are likely to report positive subjective outcomes from team building interventions even though there is little evidence that such interventions improve objective outcomes. Teams, where member relations are good, tend to feel better about their team performance irrespective of the actual objective performance. Tina's use of team building exercises may have helped improve levels of satisfaction and commitment within the team which may have promoted a positive evaluation of Tina as a leader.

From the interviews there is evidence that reflective thinking skills are being developed by L6 leaders but developing this skill further could help them to evaluate how effective their approach to support is and consider how other approaches might benefit L4 teams. For level 6 leaders who relied on past experience, the quality of the past experience and the quality of the reflection is important when it comes to supporting the L4 teams. Providing an opportunity to share thoughts and approaches could help the L6 leaders develop their thinking skills further but it is likely that such a forum would require a facilitator to enable the students to get the most out this type of activity. Emphasising and actively developing these skills from L4 onwards may help those students who are less inclined to reflect on their learning. This may in turn enhance their ability to learn and adapt.

A final implication for practice relates to 'grades' and 'feedback' during the mid-point assessment. The L4 teams receive a lot of feedback on their work at this point but the students focus seems to be on the scores. Tutors and peer supporters need to consider how they talk

about the progress check and its value in terms of learning. Even L6 leaders who believe that feedback is important can forget to emphasise it when peer leading.

With respect to choosing appropriate strategies when peer tutoring teams, the ability of the L6 leader to acknowledge unsuccessful strategies and adopt successful strategies rather than reinforcing unsuccessful approaches that they or the team are employing needs to be developed. The ability to empathise with L4 team members seems key to providing the right level of technical support for individuals. L6 leaders may have had informal contact with each other throughout the study, but formal gatherings in pairs or small groups of L6 leaders may enable the sharing and dissemination of successful approaches. In addition, training that develops empathy would help to support good decision making when choosing appropriate strategies.

The remaining sections in this chapter address the final research question. This question is answered using group work survey data and does not refer to the typical level descriptions.

5.6 Will 'cross year, small team peer leading' produce a more favourable self assessment of skill development relative to the comparison group from 2006/7

The group work survey was analysed by aggregating the responses in agreement with each question so has not been analysed phenomenologically following Giorgi's method. The L4 survey material was analysed in a quantitative way by aggregating the number of responses that agreed with the Likert style questions. This method of analysis was discussed in detail in preliminary work (Cinderey L. , Researching Professional Practice, 2007). The data collected from the pre and post test surveys is presented as supporting material and represents views on the usefulness of peer support from all nine L4 teams and therefore relates to all nine L6 leaders.

5.6.1 Findings

It is unusual for projects of this kind to have historical data for comparison, but in this case the results of the survey in 2008/9 have been compared to those from a similar cohort in 2006/7(Appendix A). Agreement that group work activities had improved communication, leadership, negotiation, conflict resolution, project management and team building skills showed a large percentage point increase for the 2008/9 research group. There was a similar large increase in agreement that group work activities had increased commitment to the task and helped them learn to become a team player. This suggests that cross year peer leading did produce a more favourable self assessment of skill development relative to the comparison group (summarised below) and is an effective way of improving group work by providing a team coach in the form of a L6 peer leader. The evidence that supports this finding is presented in Table 6 following.

% Agreeing that [a particular skill/attribute] had been developed during group work	2006/7	2008/9
Communication	55%	85%
Leadership	42.5%	75%
Negotiation	37.5%	80%
Conflict resolution	12.5%	60%
Project management	45%	75%
Team building	65%	80%
Commitment to task	25%	70%

Table 6 Self assessment of skill development during group work for cohorts in 2006/7 and 2008/9

At this point I need to examine some of the limitations of the data. There are always issues with online survey data as the response rate is often low as no one is instructing them there and then to complete and submit the survey. Other issues relate to who completes surveys - the ones that choose to complete the survey may be more 'helpful' students, which may make them better team players and they might have better team experience - or it could be angry students feel motivated to complete the survey whereas satisfied students may not which may skew the results. So although the motivations for completing the survey are unknown, both cohorts were surveyed online. Table 7 Data issues (on the next page) includes issues specific to this survey that need to be taken into account.

Issues	2008/9	2006/7	Comments
Timing of survey	After 1st semester when trial finished	After 2nd semester at the time of my preliminary research	The questions compared were identical. But we might have expected the 2006/7 cohort to be more mature as this is at the end of the academic year
Timing relative to significant events	Before they got their mark	After some assessments had returned results	Success or failure in terms of marks may affect the results
Focus	Stated specific to IS	Stated not specific to IS but was delivered through IS site	Students may have had bad experiences in other modules
Response rate	50% of the research group	25% of the module cohort	
Survey design	The skill development questions had follow up text boxes to detail illustrations if they agreed or disagreed with the previous statement	The skill development questions had follow up text boxes that asked for examples if they agreed with the previous statement	There was no change to the skill development questions themselves
Sample	There is no way of controlling the intake but in theory this cohort has lower UCAS requirements	Higher UCAS requirements on average	
Module organisation	Taught as single group for IS with 1 tutor but the arrangements for the group work were identical	Team teaching, 2 tutorials and 2 tutors together	The intervention took place in meetings held outside of the tutorial - this would have been identical to 2006/7
Unintended consequences of the research	The survey is anonymous but a degree of loyalty to the level 6 leader may have developed predisposing the respondents to be more thoughtful about the questions. The one angry response was from a female student outside the trial	Some respondents were very angry - as seen from the later free text boxes. Angry responses generally came when the students thought group work was unfair and they had been disadvantaged. The 2008 responses do not refer to having been disadvantaged by having to work in a group.	

Table 7 Data issues

Bearing in mind the limitations of the data I would suggest that the majority of level 4 students who participated in the 2008/9 survey felt in general that they had been able to develop a number of team related skills within the IS group work module. This is a large increase compared to 2006/7. I will propose that this is due in part to the attempt by level 6 students to

promote effective teamwork in the level 4 groups. This suggests that continuing the intervention for subsequent L4 cohorts is likely to be beneficial for the L4 students. Other evidence that supports this finding comes from the pre- and post test surveys completed by the L4 team members.

The responses to the pre and post test survey suggest that it was generally well received with over 90% of the L4 students agreeing or strongly agreeing with the statement that they would recommend having a peer supporter to other L4 student teams (Appendix B shows the format of the pre and post test data).

The L4 student responses to the statement *'I think the use of final year students in first year groups **did** improve the way the group operated'* suggest the peer tutor intervention lived up to expectations in the majority of teams. However this was not true for all teams. In Lucy's team which had a low number of meetings with her, only one L4 student agreed with the statement above, with the other three L4 students choosing the *'neither agree nor disagree option'*. In Evan's team the L4 students felt they had a competent emergent leader and so Evan took on the role of observer. Two of the L4 team members chose the *'neither agree nor disagree option'* in this team. Nigel's team which formed late also had two out of four team members choosing the *'neither agree nor disagree option'*. Nigel stepped in to provide peer support to give them an equivalent experience but failed to turn up to one of their meetings. However, overall the responses suggest the peer tutoring had lived up to expectations and no respondents selected the 'disagree' or 'strongly disagree' options for the statement.

One ambiguous response came from the emergent leader in Al's team. His agreement with the Likert scale question that he would recommend having a peer supporter to other L4 student teams did not reflect his written comments where he states;

'As far as I am concerned there were not many positive outcomes. Basic guidelines and information was the most important thing we got out of it.' Student 23

These comments were however off-set by a large number of positive comments from the remaining students. These are just a sample taken from the 35 out of 42 students who completed both the pre and post test questionnaire (Appendix B);

'Was good to know we were going in the right direction. [L6] Group leader helped to keep us on the straight and narrow' Student 1

'The group had a strong [L6] leader from the start and as a result got around to working far faster than without' Student 5

'Stopped the awkwardness at the start (when we first made the groups and deciding what to do)' Student 7

'We were more organised and a more efficient team. The [L6] team leader also helped us gain a greater understanding of the work' Student 12

5.6.2 Implications for practice

The group work survey shows that the cross year peer leading was successful way to promote self awareness of skill development in L4 team members and the pre and post test surveys

show the majority of L4 students remain positive about peer leaders but individual experience is variable. This has a number of implications for practice.

Originally L4 students opted into the initiative and I think it should remain optional. The same offer was made to the 2009/10 L4 cohort and there were more mentees than available mentors – focussing the peer help in a specific module to help with a specific task appears to be successful in terms of recruiting mentees but the expectations of the mentees need to be managed. The briefing to the L4 students did explain what the L6 students were and were not allowed to do whilst supporting the L4 teams and this was noted by the majority of the L4 students. The need to turn up for meetings and reply to emails promptly is included in the L6 training and was adhered to except for the instance with Nigel who had received separate training because he had not been able to attend the training day. This emphasises the need for clear, formal briefings and training for the students involved in the peer support initiative.

5.7 Summary

In this chapter I have shown how the data were analysed, related the data to the research questions and drawn out a number of implications for practice. In the following chapter I will summarise those implications and suggests ways to incorporate them into practice.

6 Chapter 6: Summary of implications for practice

6.1 Introduction

This section gives a summary of the implications for practice which then focuses on developing intercultural sensitivity followed by reasons for a careful consideration of our practice and why this is important in computing as a discipline as well as in computing as a SHU course.

My study suggests that cross year peer tutoring is potentially a good way to influence a L4 student's level of awareness with respect to perceived skills development. Peer tutoring could be a way to improve other student attributes including intercultural sensitivity. The implications for practice have been categorised into training and briefing, practice, sharing and reflection. These categories would support the factors described in McGrath's model of group effectiveness which was examined in chapter 2.4. Training and briefing would extend the input factors; practice, sharing and reflection would support process factors.

The findings suggest that in many cases L6 peer leaders are able to fulfil the role of group coach and help L4 groups operate as teams however there are a number of points to consider carefully when using peer tutors to support teamwork.

6.1.1 Training and briefing

Tutees expectations need to be managed to ensure that they are realistic. Overly high expectations may result in dissatisfaction with the peer tutoring as determined by the expectancy/disconfirmation paradigm (Appleton-Knapp & Krentler, 2006). This will need to be addressed during peer tutee briefing.

Managing the perceived expectations of the peer tutor will help to reduce the degree of nervousness that they experience before the first meeting as the peer tutors tend to incorrectly estimate what is expected of them. This will need to be addressed during peer tutor training.

A colour blind approach by peer tutors may disadvantage some team members. Bennett's (1986)framework for developing intercultural sensitivity has important implications for practice and peer tutor training and is discussed in section 6.2.

6.1.2 Practice

Using team health checks allowed teams to reflect on their team performance up to the mid-point progress check and refreshed them for the work leading to the final assessment and is something that could be adopted by all peer tutors to help the team through the dip in motivation after the mid-point formative assessment. A number of team health check exercises are available (Bryant & Albring, 2006; Levin, 2005)

Module tutors and peer tutors need to consider how they talk about the progress check and its value in terms of learning rather than focussing on marks. This may help to develop malleable rather than fixed self-theories and help the L4 students to view the progress check as a way to deepen their learning rather than as a 'performance' in which they demonstrate competence (Yorke & Knight, 2003; Yorke & Knight, 2006).

Not all peer tutors chose to use ice-breaker activities. There appears to be little evidence that ice-breaker activities improve the objective group outcomes for small teams that meet face to

face for medium term projects and that it is unlikely that the simple 'get to know you' ice-breakers develop relationships to any great extent and so for a mid to long term project is unlikely to impact on the subjective group outcomes. However the ice-breaker activity may be useful for alleviating initial nervousness, confirming group membership and elevating peer tutor status (Brown R. , 1988). Reflective team building exercises at intervals through the project may improve subjective team outcomes (Salas, Rozell, Mullen, & Driskell, 1999).

The ability to empathise with tutee team members seems key to providing the right level of technical support for individuals.

6.1.3 Sharing

An opportunity for face to face support within a group of peer tutors and with the co-ordinator may be beneficial as blog entries do not always reflect the complexity of L4 team dynamics.

Peer tutors may have had informal contact with each other throughout the study, but formal gatherings in pairs or small groups may enable the sharing and dissemination of successful approaches. Peer tutors are more likely to believe they can encourage positive behaviours in the L4 team when advised by other peer tutors who have been successful themselves (Stone & Bailey, 2007; Yorke & Knight, 2003)

6.1.4 Reflection

The ability of the peer tutors to acknowledge unsuccessful strategies and adopt successful strategies rather than reinforcing unsuccessful approaches that they or the team are employing needs to be developed.

There is evidence that reflective thinking skills are being developed by peer tutors but developing this skill further could help them to evaluate how effective their approach to support is and consider how other approaches might benefit tutee teams. For peer tutors who relied on past experience, the quality of the past experience and the quality of the reflection is important when it comes to supporting the tutee teams. Providing an opportunity to share thoughts and approaches could help the peer tutors develop their thinking skills further but it is likely that such a forum would require a facilitator to enable the students to get the most out this type of activity, to encourage and prompt sharing. This would help the development of positive efficacy beliefs and meta-cognition that employers' value (Yorke & Knight, 2003) as well as move the peer tutors further towards the professional end (bridging the gap between 'doing' and 'changing') of the learning gaps framework (Light & Cox, 2001).

Emphasising and actively developing critical reflection skills from L4 onwards may help those students who are less inclined to reflect on their learning. This may in turn enhance their ability to learn and adapt.

6.2 Developing intercultural sensitivity

One of the important findings from Chapter 5 is the need to develop intercultural sensitivity. Bennett (1986) presents a framework for developing intercultural sensitivity. Bennett's paper presents;

> *'... a continuum of stages of personal growth that allows trainers to diagnose the level of sensitivity of individuals and groups and to sequence material according to a developmental plan. The developmental continuum moves from ethnocentrism to*

ethnorelativism. Earlier stages of the continuum define the parochial denial of difference, the evaluative defence against difference, and the universalist position of minimization of difference. Later stages define the acceptance of difference, adaptation to difference, and the integration of difference into one's world view.' (Bennett M. J., 1986, p. 179)

This framework has been adopted in an attempt to encourage the development of empathy in peer tutors to address implications for practice arising from the findings relating to research question - 'What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders?' in section 5.3.

A number of authors emphasise the importance of acknowledging that intragroup (cultural) differences exist, and encouraging students to note cultural difference in neutral or positive terms (Cox T., 1993, p. 91; Park & Judd, 2005; Grace & Gravestock, 2008) rather than adopting a colour blind approach that ignores difference.

The next stage of this piece of doctoral work is to further develop the peer tutor training by incorporating the ideas of Bennett, Cox, Park and Judd, and Grace and Gravestock to equip students from both sides of a cultural divide to work towards resolution when cultural difference is causing conflict in groups. This group of peer tutors had little difficulty in noting that conflict occurred in teams and were aware of the team building lifecycle; forming, storming, norming and performing. The training will be developed further to allow subsequent peer tutors to offer more support to the tutees during the storming and norming phases. The main objective is to ensure that the tutee team comes through these two phases without having isolated any team members. My adaptation of Bennett's framework to develop the peer tutor training is available in Appendix O and provides suggestions for activities to move peer tutors towards an ethno-relative approach to encourage the development of empathy.

Bennett's framework provides ways of identifying the stage of intercultural development of an individual or group and gives suggestions as to how to move the individual to the next stage. I will not be able to provide individualised diagnosis and training for the next cohort of peer leaders and will instead consider the first three stages of development which work to reduce ethno-centricity and through training attempt to encourage students into the initial stage of ethno-relativity – acceptance of difference.

According to Bennett, in the acceptance stage of ethno-relative cultural development, students need opportunities for practical application of the skills of empathy and cultural sensitivity and the weekly meetings with the tutee teams will provide this. Evidence that peer tutors have moved into the acceptance or adaptation stages of the framework will come from the weekly blogs where the leaders will record their experience, reflection and next action, to support the tutee teams using my adapted diary template (Appendix P) which asks them to consider the cultural implications of interactions in their L4 teams. By considering cultural implications the peer leaders should be able to deal more sensitively with team members, and benefit all not just the ethnic majority L4 team members. An increase in empathy should allow peer leaders address issues of conflict or withdrawal within L4 teams more effectively.

6.3 Importance of the findings and implications for practice within Computing

Developing cultural sensitivity and empathy in BSc Computing undergraduate teams is important for a number of reasons.

Diversity with respect to ethnicity is higher in computing disciplines (Information Communications Technology, ICT) than other subject areas;

> *'Ethnic minorities are very unevenly distributed across subjects. They feature disproportionally in medicine and health-related subjects, law and business, engineering and ICT but are under-represented in the pure sciences and the humanities. So, only a few universities and not all disciplines can truly claim to be multi-ethnic.'* (Modood, 2006, p. 248)

In addition, ethnic minority students tend to be concentrated in post 1992 universities; SHU would fall into this category. This is a point made by Modood (2006) when discussing the disparity between the likelihood of an offer of a place at a traditional university for white students compared with some ethnic minority students, which he contrasted with the likelihood of an offer from a 'new' (post 1992) university.

> *'... when all the main factors are controlled for, there has been shown to be a bias against ethnic minorities in the pre-1992 universities and in their favour in the new universities'* (Modood, 2006, p. 249)

Therefore the likelihood of working in a team with ethnic minority undergraduate students may well be higher in computing disciplines in new universities than other academic disciplines at traditional (pre-1992) universities. The ability to work well in diverse teams is therefore important at an undergraduate academic level in technical subjects such as computing particularly in universities such as SHU. Eliminating any negative impacts on ethnic minority team members such as those observed by Shaw (2004) is essential to allow all undergraduate students the opportunity to progress successfully through their degree course.

Internal data for SHU shows that there are indeed a greater number of ethnic minority students in the faculty of Arts Computing Engineering and Sciences (ACES) compared to other faculties. The faculty of ACES has the highest proportion of undergraduate students from ethnic minority backgrounds (18% of males and 10% of females) (Race Equality Annual Report, 2008) which will be concentrated in the Computing and Engineering departments.

	Year 1	Year 2	Year 3
% Female	11%	11%	20%
% Ethnic Minority	15%	15%	34%
% Disability	17%	11%	3%

Table 8 Figures derived from the 2008/9 HESA Return, Courses Included: BSC Hon Computing, BSC Hon Computing (Web Info Systems & Services), BSC Hon Computing (Networks), BSC Hon Computing (Business Information Systems), BSC Hon Computing (Software Engineering), BSC Hon Computing (Visualisation)

A breakdown of demographic data for computing courses, which include the cohorts involved in this study, is shown in Table 8. This shows that although there have been some variations

over the past three years the percentage of ethnic minority students in Computing is consistently above the university average of 13% and higher than the proportion in the local population (South Yorkshire) of 5% (Race Equality Report 2008 Annual Report, 2008).

Withdrawal data shows that a higher proportion of ethnic minorities withdraw compared with their white counterparts in each of the four faculties (Race Equality Report 2008 Annual Report, 2008). Within ACES the difference in the withdrawal rate is smaller than other faculties; however within BSc Computing reduced participation of ethnic minorities compared with white students has been observably higher in 2009-10. Reduced participation may affect the degree classification. Modood's analysis of UK wide data reflects the same findings.

> *'ethnic minorities are less likely to enter the more prestigious universities, are more likely to drop out and if they last the course they are less likely to get a high grade degree (though all these things are less true of the Indians and Chinese than of the other groups)'* (Modood, 2006, p. 248)

It has been apparent through the year that students who have exhibited lower levels of participation are from ethnic or gender minority groups – these include a white female student, three male Asian students, and a male Middle Eastern student, compared with one white male student. There are many reasons students withdraw from courses or reduce their level of participation, but one way to reduce the risk of this happening is to develop good team working relationships and therefore reduce isolation. Lower participation rates are often anecdotally related to lower grades. This again supports the need to develop cultural sensitivity within the student team in order to develop good working relationships for all team members regardless of cultural background and to ensure that team based assessments do not contribute to the lowering of attainment for ethnic minority students.

Looking at other aspects of diversity, Table 8 also shows the percentage of students declaring a disability has increased considerably since 2006/7. This shows that there is greater diversity in SHU Computing degree courses with respect to ethnicity and increasing diversity with respect to disability which adds weight to the need to develop cultural sensitivity and empathy within undergraduate student teams. It also shows that the percentage of women has dropped over recent years and increases the chance that women will be working as a lone female in team work projects.

Looking more widely for support for improving cultural sensitivity in team working environments, the HE Academy endorse the development of good team working relationships as stated in the computing specific student employability profile – but here the emphasis is on graduate employability rather than undergraduate retention and achievement.

> *'[Computing graduates should be able to] work as a development team member, recognising the different roles within a team and different ways of organising teams'* Student Employability Profiles (2006, p53)

Another reason for developing the cultural sensitivity of computing students relates to the nature of the discipline and the type of student it attracts. Computing is a technical subject and technically-oriented people may have a tendency towards physical universalism (Bennett, 1986, p. 190) believing that cultural difference is mainly superficial. According to Bennett, physical universalism may betray a belief that "one's basic humanity will shine through if one is

sincere". This minimisation of cultural difference may have led to a misreading of body language in one of the L4 research teams when Leo's body language didn't mirror that of his British team members (Yve, 2009). The tendency to minimise cultural difference is a behaviour which is located in the ethnocentric region of Bennett's developmental continuum.

The HE academy does not focus on the development of cultural sensitivity. In the generic competencies section of the Student Employability Profiles the development of 'interpersonal sensitivity' is listed, which could be considered to be different to 'cultural sensitivity' (Student Employability Profiles, 2006).

Higher Education Academy for Information and Computer Science (HEA ICS) does not focus on cultural sensitivity within student groups in any of the recently published papers although there are many studies which involve groups of students at some level; one recent study published in the online journal examines gender and culture (Khan, 2006); others examine gender (Wishart, 2005; Cook, Leathwood, & Oriogun, 2002); group work strategies (Sheridon-Ross, Harrison, & Gray, 2006); group work experiences (Beaumont, Owens, Barret-Baxendale, & Norton, 2008). This suggests that the effect of diverse student populations in undergraduate computing teams is not one that is being studied in depth at this time.

Beyond higher education it is stated that employers want graduates who have well developed soft skills to compliment the technical skills that they have acquired. One skill that is often cited is the ability to work effectively in a team. This is stated as a requirement of professional bodies (Bryant & Albring, 2006; Bramhall et al, 2005) as well as a requirement of employers (Brandyberry & Bakke, 2006; DeShon et al, 2004; Dunne, 2000; Ellis et al, 2005; Student Employability Profiles, 2006). Teams in computing and software engineering are unlikely to be culturally homogenous; therefore working successfully in teams will require cultural sensitivity. According to Cox (1993)

> *'Ignorance of cultural difference is a source of ineffectiveness in the work performance of diverse work groups. Likewise, a knowledge of the cultural differences in diverse workgroups will enhance work relationships and work team effectiveness.'(Cox T. , 1993, p. 128)*

6.4 Summary

It is hoped that the adaptation and continuation of the peer support initiative for teamwork in IS will encourage students to develop intercultural sensitivity and enable them to note cultural difference in neutral or positive terms. This will benefit them by enabling them to become more skilled team leaders and team workers.

This section shows that an initiative to develop cultural sensitivity is particularly relevant for computing students because of the cultural diversity within the cohort and a possible tendency towards physical universalism exhibited by technically oriented people which might lead to misinterpretation of behaviour.

7 Chapter 7: Conclusion

7.1 Introduction

In this section I relate the original aims and objectives to the outcomes of the thesis. I will also examine strengths and limitations of the methodology and discuss what phenomenology has yielded in terms of data that cannot be obtained by other methods along with ethical concerns relating to asymmetric power relations that are to some extent mitigated through a phenomenological approach. I also consider what implications a lack of empathy may have for research. Finally I explore how my intercultural sensitivity, which was implicit at the outset, has been moved to a more explicit level during this study and consider the issues involved in introducing intercultural sensitivity to peer mentoring.

7.2 Research questions, objectives and outcomes

Research Questions

What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders?

How do L6 student leaders apply prior knowledge when mentoring cross year peers? Prior knowledge includes technical knowledge and team process knowledge.

How/when do L6 student leaders seek new knowledge to solve perceived problems?

Will 'cross year, small team peer leading' produce a more favourable self assessment of skill development relative to the comparison group from 2006/7?

The research questions above are as shown originally in Figure 1, p3. The original objectives of the study were;

Operational Objectives to support the study;

- to examine the group work environment by auditing the module group work project to ensure that it is appropriate as a group task;
- to equip the L6 co-researchers through training in team and leadership processes and research issues to support their data collection;
- to develop materials that will support this training;
- to present a picture of what happens in undergraduate group work under these particular circumstances;

General Objectives;

- to develop an approach to the thesis using an appropriate research methodology;
- to examine my role as a researcher in an interpretive research study;
- to develop an approach which is appropriate for data collection;
- to analyse the data in a way that is in line with the methodological approach;
- to develop new approaches, based on findings, to improve group work in higher education especially in computing courses

Examining the group work environment for this particular study was useful as it prompted the discussion of recommendations for best practice for student team work. This review established the breadth of research into student teams, but also showed how little research was conducted into the day to day experience of being a computing student team member and the asymmetric power relation that exist in student teams.

The mainly operational aspects of the thesis such as recruiting and training the leaders, and recruiting the L4 participants required thought, effort and co-ordination, with a risk management strategy and were successful in that they delivered more data than was possible for me to analyse within the time constraints. The findings from this study have highlighted changes that are required to the approach to peer tutor training to promote better intercultural understanding in teams

7.3 Methodological issues

Survey data were collected from L4 students (n = 42) and diary and interview data from L6 leaders (n = 9 and 4 respectively) which gave a broad view of what was happening within the student teams over the course of the semester. The focus was narrowed from nine L6 leaders to four L6 leaders in order to attempt a phenomenological approach to the analysis.

Many of the methodological issues that relate to the collection and analysis of the L4 survey data have been discussed in section 5.6.1 and so will not be addressed again here. The aggregation of survey responses can show improvements for a cohort whilst masking the effects on individuals. An increase in sample size is offset by the decrease in richness of the data and it is the phenomenological approach used in this study that I would like to focus on in this section.

Phenomenology as an approach to research has provided a richness of data that could not have been obtained through survey methods. The richness of these data also increases the impact that they make when read as a whole because the story or account of the participant takes centre stage. This cannot be duplicated in a quantitative analysis. Phenomenology also reduces but cannot eliminate the asymmetric power relations between the story tellers and me the researcher. The L6 leaders gave precedence to the part of the peer tutoring experience that was most salient to them, using the language they preferred to describe in. The L6 leaders were conscious agents whose experience needed to be studied from the 'first-person' perspective and phenomenology offered a way for me to do this. The methodological approaches that were discussed in Chapter 3 that were phenomenological to some degree were ones that create meaning from the data, rather than from a prior theoretical framework from which codes or categories are created: inductive rather than deductive and this was my aim. However, on reflection this was not entirely true of my approach as a certain amount of pre-coding did inevitably occur through the blog template and the interview schedule. This did not stop issues, such as the presence or absence of empathy – which was not pre-coded in any data collection tools, emerging, along with L4 team behaviours at different points in the semester.

My approach tries to minimise the impact of other limitations to the method which include;

1. Error on the part of the respondent
    a. perception
    b. memory
    c. deceit
2. Researcher's subjectivity (Giorgi & Giorgi, 2003)

The respondent's perception of the original situation is dealt with by a clear statement of the epistemological stance that has been taken. In this case the phenomenological approach deals with the respondent's perception and makes no claims to an objective truth.

The problem with the accuracy of the memory has been alleviated to some extent by asking that the diary accounts (blogs) are recorded soon after the event. And although the interviews were conducted three months after the last meeting they are reasonably close in time to the event and can be cross referenced against the event via the blogs.

Deception is harder to deal with, but as the research is ongoing for 10 weeks, it would be difficult for a respondent to maintain a deception. The final analysis selects four L6 leaders from the original nine. Those selected maintained a narrative that was coherent. The 'voice' with which the entries were written was consistent. To maintain an authentic sounding 'voice' whilst intending to deceive would require greater effort than an honest account. So for any students who were engaged in this just for the money - writing an honest account of the experience would be an easier way of earning their pay than creating a fictitious narrative. In addition, the respondents' descriptions of team members would need to be aligned to some extent with how I experience those students as I teach the L4 students. The L6 respondents are fully aware of this. Finally, as phenomenology is about capturing an experience and so does not have a hypothesis, there would be little to gain for the students in faking the content of the blog entries. The actual number of meetings can be cross referenced easily with the team members and the nature of the research was discussed during the initial briefing of the L6 leaders.

The researcher's subjectivity is addressed by;

1. showing all the steps in the analysis so that they are available for scrutiny
2. using a critical other to examine the transformations
3. providing a statement of the researchers position within the research

To overcome the researcher's subjectivity I attempted to apply systematic methods to prepare the data for analysis. The data was examined by a critical other, but I was aware that some of the steps in transformations and interpretations of the data could not be made transparent and so another step was needed to give the analysis credibility, which was to delay aspects of the literature review to compensate for the difficulty in bracketing. Delaying parts of the literature review, which is a feature of some inductive approaches (Charmaz, 2003), is a way of trying to reduce the chance of identifying data that supports a prior theory and ignoring data which might suggest a different emerging theme. The literature review does have an important role in informing the analysis and so the method applied here involved an iterative approach to the analysis. The data is prepared for analysis, themes are identified, then a literature review of the main themes is carried out, and then the data is examined again. I also

examined my positionality and presented that as part of the thesis, following a structured framework for my reflection.

A difficulty I had with the methodology was the writing of typical level descriptions (Giorgi & Giorgi, Phenomenology, 2003) which was very difficult because of the low number of cases. Better typical level descriptions can be written as more cases are studied.

Ethical issues encountered in this study relate to asymmetric power relations at a number of levels. These include the political and ethical aspects of qualitative research, the position of the practitioner researcher, the difference in status between the L6 leaders and the L4 team members (as made explicit in the L6 participants interview's) as well as the asymmetric power relations which exist within student teams (Tonso, 2006) discussed in Chapter 3, all of which contribute to a complex dynamic of enabling and constraining forces.

Political and ethical aspects of qualitative research (Punch, 1998)consider issues such as the researcher personality, geographic proximity, nature of research object, researcher's institutional background and the gatekeepers who control access to and funding for research. There are interesting political dynamics relating to my research with participants and practitioner researcher from one faculty being enabled by another faculty. The different perspectives provided by such a cross fertilisation will add to the originality of the research as well as question the constraints or lack of enablers that prevent the development of such research within the originating department and faculty. The research that is promoted within a faculty will be influenced by the research culture that has developed and may have complicated relationships with ethnicity and gender with respect to who researches and what is researched. Once the research starts, other ethical issues are important.

One of the main issues within the study in this research is the care of the L6 and L4 participants. This was provided through training and briefing to explain the boundaries and limitations for involvement of the L6 leaders, regular contact with all the participants through the ten weeks, being available to support L6 leaders when they requested help, and debriefing L6 and L4 students at the end of the initiative. The research itself revealed the strengths and the limitations of the L6 leaders' abilities to deliver the same level of care to the L4 teams. Those leaders who demonstrated a higher degree of empathy were able to sensitively and confidently support all the L4 team members. This leads on to the issue of empathy and how that might affect research.

The relationship between empathy and research is not one that appears as a main focus in research methodology however when considering the definition it is clear that it is an important attribute in qualitative research. Empathy is defined as;

> *'The power of identifying oneself mentally with (and so fully comprehending) a person or object of contemplation'* (Allen, 1990)

What impact would L6 levels of empathy have on the research method? The phenomenological approach of Giorgi (1985) which I adopted for this research uses naive description as data. The naive description is one that has not been analysed. As my main primary research aim was to discover what was being experienced by the L6 leaders, varying levels of empathy is something that is uncovered by the research, rather than limiting it. My own empathy levels are more crucial as I need to comprehend the meaning of the accounts of

the L6 leaders in order to interpret them. My ability to identify with the L6 leaders is shaped in part by my past influences and experiences which led to the examination of my positionality as a researcher.

A reflection on researcher positionality is used as a tool to reveal past influences and cultural issues that may bias a researcher's analysis and conclusions. The framework used in this study had a number of uses. It reveals the researcher's influences to other researchers or interested parties, which helps to make more transparent the decisions made by the researcher. Using a reflective tool also highlights and brings to the surface influences that the researcher may have been less aware of. It was this particular step in the methodology that allowed me to identify the implicit cultural sensitivities that I had already developed in relationship to gender and class and to state them explicitly. It also allowed me to examine the cultural sensitivities that I had been developing, which are based on an increased contact with staff and students from a variety of ethnic groups. This has been an important part of the process of 'doing a doctorate in education' as it helps to develop my practice as an educator and increases my awareness of possible constraining features of the systems in place in the environment in which students attempt to learn. The framework for reflection in this study (Milner, 2007) was a critical framework for reflection and along with some critical questions used by interpretive phenomenological analysis (IPA) (Smith & Osborn, 2003) resulted in a study situated in the critical knowledge domain.

Using critical questions such as 'is something leaking out here that the participant is unaware of' led to the emergence of issues relating to prejudice and ethnocentricity which seemed to have been the result of a colour-blind approach by the peer supporters. Taking a critical stance during analysis produced uncomfortable revelations. Because of the taboo nature of racism and race issues, data relating to such areas would be difficult to collect directly through short answer questions or direct interviewing. By using a critical approach to phenomenological diary data, alongside the kind of direct observation that is available to a practitioner researcher, these sensitive issues were able to emerge. The outcome of this was the emergence of the important role that intercultural sensitivity or empathy plays in peer mentoring.

Issues involved in improving the student group experience by bringing intercultural sensitivity into peer mentoring include the development of material, levels of maturity of the peer leaders – especially if unpaid L5 students are to be used instead of L6 students, the time for training and who will do the training, the culture within the department and whether such a development is valued. Bennett's (1986) developmental framework is a useful guide for producing training materials, however from a social and cognitive psychological perspective the development of personal attributes takes time and repetition (Yorke & Knight, 2003). Whether this is pursued and resourced will be determined by multiple factors such as whether there is a convergence of interest (Milner, 2007) between the experience of students and the ability to recruit to courses through admissions, and the position on Bennett's (1986) intercultural development spectrum of any gatekeepers or decision makers who can enable the continued development. Financial constraints mean that payment for peer tutors may no longer be available and so the selection of peer leaders will change. This will mean that peer leaders will have different motivations as volunteers and different levels of commitment, experience and maturity relative to the L6 leaders in this study.

There are issues with practitioner research that might be considered problematic within certain research frameworks but this piece of research is presented as an honest attempt to discover what was happening in student teams, through the eyes of peer leaders and analysed by a practitioner who has worked for many years in the 'swampy lowlands' of student group work. The findings from this study have highlighted changes that are required to the approach to peer tutor training to promote better intercultural understanding in teams. Conflict in teams is well documented (Tuckman, 1965); studies have also begun to show that diversity in student teams can increase the level of conflict (Napier & Johnson, 2007). It was only by examining the day to day interactions through the eyes of peer mentors that we could see the potential problems caused by colour-blind approaches to cultural difference that could adversely affect ethnic minority students. Where other research had identified a problem for ethnic minorities in student teams (Shaw J. B., 2004), my research has shown why this can occur. This research has brought together student teamwork research, peer mentoring and critical race theory in a way that is new to education research in undergraduate computing.

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9 Appendix

9.1 Appendix A Group work survey

Data were collected in 2007 from the 2006/7 IS module cohort and the again in 2008 collecting data from the 2008/9 IS cohort. The students in both cohorts were studying BSc Computing courses. The column compared is the '% agree'. This aggregates the 'Strongly agree' and 'Agree' responses, but does not give any additional weighting to the strength of feeling.

Group work survey questions	SA	A	NA ND	D	SD	NA	UN	TOTAL	%agree	item index w&a**
weighting	5	4	3	2	1					
Being part of a group increases your commitment to the task.										
2008-9 research group	3	11	4	1	0		1	20	70	73
2006-7	5	5	15	6	9	0	0	40	25	55.5
During group work activities you have improved your communication skills .										
2008-9 research group	4	13	2	1	0	0	0	20	85	80
2006-7	5	17	10	7	1	0	0	40	55	69
During group work activities you have improved your leadership skills.										
2008-9 research group	6	9	4	1	0	0	0	20	75	80
2006-7	4	13	18	4	1	0	0	40	42.5	67.5
During group work activities you have improved your negotiation skills.										
2008-9 research group	3	13	3	1	0	0	0	20	80	78
2006-7	2	13	18	5	1	0	1	40	37.5	63.5
During group work activities you have improved your conflict resolution skills.										
2008-9 research group	5	7	7	1	0	0	0	20	60	76
2006-7	1	4	21	8	2	2	2	40	12.5	51
During group work activities you have improved your project management skills.										
2008-9 research group	6	9	4	1	0	0	0	20	75	80
2006-7	4	14	14	4	2	0	2	40	45	64
During group work activities you have improved your team building skills.										
2008-9 research group	6	9	4	1	0	0	0	20	75	80
2006-7	5	14	13	4	2	0	2	40	47.5	65
During group work activities you have learned to become a good team player.										
2008-9 research group	6	8	4	2	0	0	0	20	70	78
2006-7	1	18	14	3	2	0	2	40	47.5	63.5

*%agree no weighting applied
**item index weighted and adjusted for numbers of respondents
SA strongly agree
A agree
NAND neither agree nor disagree
D disagree
SD strongly disagree
NA not applicable
UN unanswered

9.2 Appendix B Pre-Post test survey

Paper based survey conducted at the start of the initiative and after the completion of the project.

Student No replaces the student name. The students have been grouped by peer leader. The proportion of students who agreed with the statements has been aggregated, but the strength of feeling has been omitted in this total.

1= strongly agree 2= agree 3= neither agree nor disagree 4= disagree 5= strongly disagree

The survey included two free text areas on the post test.

The results for 1 team are presented to illustrate.

Student No	1	2	3	proportion agree	5	6	7	proportion agree
Team Leader	L6 - Linus				L6- Rob			
I think the use of final year students in first year groups could improve the way the group operates	3	2	2	0.67	2	1	2	1
I think the use of final year students in first year groups did improve the way the group operated	2	1	3	0.67	2	1	2	1
Question 6 Were there any other positive outcomes from having a final year student leader? Please write down any thoughts here.	Was good to know we were going in the right direction. Group leader helped to keep us on the straight and narrow				The group had a strong [L6] leader from the start and as a result got around to working far faster than without	The [L6] leader has organised the work that each people will do. This means that everyone will participate the work together	Stoppped the awkwardness at the start (of when we first made the groups and deciding what to do)	
Question 7 Were there any other negative outcomes from having a final year student leader?	nope				trying to meet quickly can be a problem	There are no negative outcomes	None at all	
I would recommend other first year students to take up the opportunity of having a final year student leader.	1	1	2		2	1	2	

9.3 Appendix C Diary template - A weekly record of the experience of being a team leader

Date of meeting _____

First thoughts about the meeting - take 1 minute to write whatever you want

The atmosphere in the meeting was... This week I successfully applied my skills/knowledge to... (Description) It was successful because... (Reflection) This week I was unsuccessful in applying my skills to... (Description) It was unsuccessful because...

I think the group is at the ..... stage in the team building cycle. To move the team on, I decided to... To prepare myself for the next meeting I will...

Have any of your initial thoughts changed after reflection?

9.4 **Appendix D** Interview Schedule

1. Before the first meeting what did you think the group expected of you? What was the reality? Did your perception change? How?

2. What barriers to success did your group need to overcome? (People factors).
   Language/Personality/Temperament/Motivation/Goals/Technical ability/Other

3. Were you able to help them? How?

4. What sort of conflict did your group experience? How was it resolved?
   Task conflict/Personality conflict/Conflict between you and the group/Socio-cultural/gender conflict/Other

5. Were you able to help them? How?

6. What were the process factors that determined how quickly the group progressed with their task?
   How do they decide if a task is finished? /How quickly were they able to pick up a task?/How many times did the group restart work?/How open were the lines of communication within the group?/How did they decide if the group had the necessary skills?/Other

7. Were you able to help them with any of these? How?

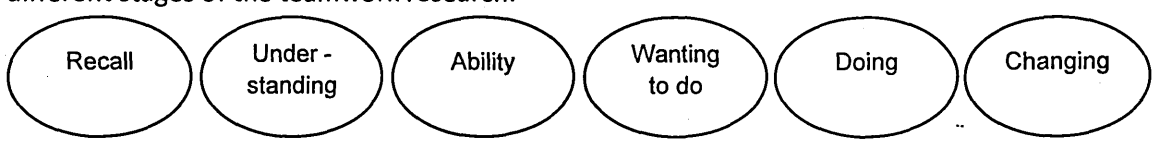
8. Were there any group members who you felt needed more of your attention than others? Did you feel it was/was not appropriate to respond? Why?

9. Each week you had to make a decision as to what you would do the following week and prepare for the meeting. What were the factors that determined how you did this?
   Time/Resources available to you/Confidence levels/Previous experience/Other

10. What would you say your most valuable contributions to the group were?

11. Were there any issues you didn't feel you could deal with?
    Authority/Experience/Constrained by the system/Confidence/Other

12. Where would you place yourself on the learning gaps matrix?
    You may like to consider which of these domains you were operating within at different stages of the teamwork research.



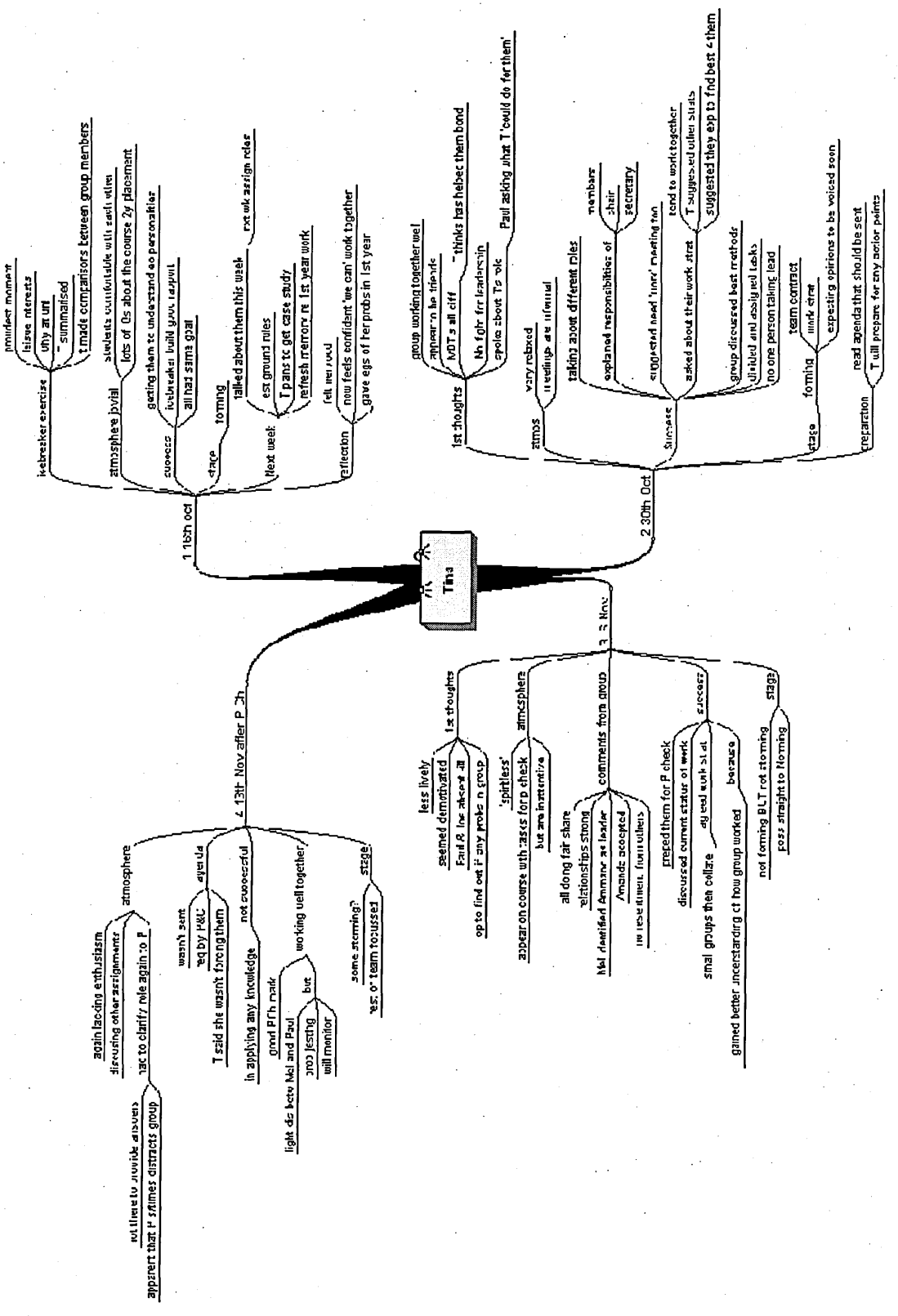
    Which gap were you attempting to cross if any?
    How would you describe what happened during that attempt?
    How would you describe the outcome of that attempt?

9.5 Appendix E Sample of Blog Data- Tina

The data here is used to address the research questions: What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders? How do L6 student leaders apply prior knowledge when mentoring cross year peers? How/when do L6 student leaders seek new knowledge to solve perceived problems?

BBline no	LeadID	Date	Meeting No	Line No	Discriminated meaning units expressed as much in S's language and based upon the perspective that the description was an example what happened in meetings from the point of view of the L6 leader. Sections in bold indicate prompts from the diary template that the student chose to use.	Discriminated meaning units expressed more directly in psychological language (I think this can probably be changed to technical language - psychological, sociological, criminological depending on your context) and with respect to the relevancy of the phenomenon - so in this study relating to RQs What happens in 'cross year, peer led teams' as observed and experienced by the L6 peer leaders? How do L6 student leaders apply prior knowledge when mentoring cross year peers? How/when do L6 student leaders seek new knowledge to solve perceived problems?
671	Tina	16-Oct	1	1	**First thoughts about the meeting:** I'd consider the first meeting a success. The students engaged in the ice breaker game and the discussions.	Tina reports that the team members 'engaged' with an icebreaker activity. This is prior knowledge from PAL training.
672	Tina	16-Oct	1	2	I was pleased with the positive attitudes of the students and their enthusiasm to understand more about the course.	Tina was pleased with their positive attitudes and enthusiasm to know more about the course - this is looking to the future, beyond the task they are working on.
673	Tina	16-Oct	1	3	We have set a time/date for our weekly meetings this semester and we discussed what my role does and does not entail.	Tina uses this first meeting to determine a fixed meeting day and to communicate her ground rules with regard to her role in the group - setting boundaries.
674	Tina	16-Oct	1	4	The atmosphere in the meeting was relaxed and jovial. The students all appeared comfortable in each others company	Tina found the atmosphere of the meeting to be relaxed and 'jovial'. She observes that they appear comfortable in each other's company.
675	Tina	16-Oct	1	5	and were very interested in finding out as much as they could about the demands of the course, both in the first and second year. They had a lot of questions regarding both the course and my placement year, which I was more than happy to answer and I could tell my answers put them at ease.	The group had a lot of questions about Tina's experience on placement and about the course in general.
676	Tina	16-Oct	1	6	**This week I successfully applied my skills/knowledge** to help them understand each other's personalities. I did an ice breaker that allowed us all to find out each other's proudest moments, our leisure time interests and why we're all attending university. At the end I summarized what we'd found out and made comparisons between the group members.	Tina feels she was successful in getting them to understand each other's personalities better by using a 'proudest moment' icebreaker, along with leisure activities and motivation for attending university. The idea of personality is mentioned (not unexpected as the L4 student do a personality test) but Tina talks about encouraging them to understand each other.

9.6 Appendix F Overview mind map – Tina part 1



9.7 Appendix G Tina Interview Transcript

Interview Schedule and Transcript – schedule was emailed to participant prior to interview which was recorded in an interview room and recorded.

	Interview Schedule Tina
1	**1. Before the first meeting what did you think the group expected of you? What was the reality? Did your perception change? How?**
2	Maybe see me as a mentor. I didn't want to be seen as a secondary teacher. I wouldn't be helping them with the actual work but with how they should work as a team.
3	They might want to send personal emails to her if there was conflict in the group. This never happened on a personal basis -I did get emails Re. the illness, tasks not completed and what they were doing about that. – but I had made the offer. They all seemed professional – certainly equivalent to my first year team.
4	My role was discussed in first meeting but I had to re-explain in subsequent meeting to one team member who tried to get answers out of me
5	The team saw me not as a peer but as an intermediate level. They showed what they had done - this doesn't happen in a peer group. When you are a peer it doesn't matter what proportion of the workload you have done in respect the amount you wanted done whereas when I came to the meeting it's – 'I've done this, I've done this'. Not seeking approval but checking that they are on track.'
6	**Prompt; was it a project management role? – Yes, but I hadn't thought about it like that before.**
7	In first session we established ground rules, red/yellow card, minutes agendas, decided on rotating chair and secretary who was responsible for the minutes, and previous meeting minutes were used to ensure everyone had completed. Sometimes the task wasn't done – for example there was one student who hadn't completed their work after a number of weeks, Paul 3.20.
8	I noted that he wouldn't ask for help so I intervened –I did it in a manipulative manner – I related things back to my first year groups a lot – where I had done well or let myself down and provided examples without saying this is how you should do it.
9	I described the situation in my group with a group member not understanding one of the diagrams. The group member said she hadn't had time rather than admitting that she wasn't sure how to do it, so it was being delayed week after week. The group eventually realised that she was afraid to voice her opinions so the team decided to go through the tutorial work together so that everybody understands rather than going straight to task delegation. This would highlight any problems that needed to be taken up with the tutor.6.10. It was after this that this team [combined forces and] had a group attack on that task and that is when it got done.
10	Paul was very jokey, didn't seem to take the tasks seriously, but was grounded by the others. But he did keep everyone' spirits up.
11	I think their different personalities enabled them to work so well together.7.09.
12	On one occasion the minutes weren't done and at the start of the next meeting the students were actually doing their maths homework. At this point I approached you for guidance about my role.
13	**2. What barriers to success did your group need to overcome? (People factors).**
14	Language/Personality/Temperament/Motivation/Goals/Technical ability/Other
15	7.40 Motivation problem in one meeting before a progress check had happened – I think that was because they were a long way from the actual walkthrough assessment.
16	Technical ability was OK except for the issues with Paul.
17	The only other barrier was the small conflict between two members Paul and other female in group Mel I didn't know if this was just down to Paul's jokey banter. Paul would be quite territorial with his work and be argumentative with this one team member – but it would quickly blow over. 9.20
18	3. Were you able to help them? How?
19	I would ask if everyone was OK (rather than focussing on Paul and Me, and I could judge from the body language that they were all comfortable with each other.
20	**4. What sort of conflict did your group experience? How was it resolved?**
21	Task conflict/Personality conflict/Conflict between you and the group/Socio-cultural/gender conflict/Other
22	I didn't observe task conflict due to the fact that the secretary would note who should be doing the task – so that was clear and I had advised them to delegate out the tasks [so they weren't all working on the task together] and then bring it together and go through it.
23	At meetings everyone was fine with what they had been allocated.
24	Whether they had task conflict at their other meeting on the Tuesday I do not know but by the time they got to the meeting with me on Thurs they were happy and ready to delegate the next set of tasks.
25	The team was diverse re gender.
26	Initially the team claimed there was no emerging leader, but after a 3 weeks they established that Amanda was taking the lead role 13.00 – she was very relaxed, but still had – not power, but authority to delegate tasks and deadline, but she was very open and asked if that was ok with everyone

9.8 Appendix H Preliminary work focus group

A group of L5 computing students were invited to a 1 hour focus group after responding to an open question survey. This represents a sample of the transcript. This was used to develop the questions in the group work survey (Appendix A) asking about skills development in the areas that were identified by this group of students. Focus Group Questions were provided prior to the session - What do you think are characteristics of a good team? Do you think your group work activities help you to develop these? How do you resolve conflicts in team/groups? How similar is group work to teamwork? What do you think would develop your teamwork skills more effectively?

	Focus Group Sample transcript from which the survey categories were developed
	Introduction - looking at the responses to open text survey questions and then moving on to ask about the characteristics of good teams
Lynn	**Survey responses suggest you have an idea that group work is preparing you for the workplace. Where did that idea come from?**
H	[tutor1] - basically
	First year mod Profs and Comms
I	Especially when you did your group types as well
H	and you peer assessments where you worked out what your role was and you mark each other
V	It's the only time we've done it unless you guys have done it in your modules
I	We did it with [tutor2] but it didn't count - whereas it was your module (BSA) where we did it as well
Lynn	**So you've moved onto this idea of peer assessment. It seems quite important, the idea that you are working in groups but the input isn't going to be even, but the mark that you get overall is the same**
B	Depending on who you work with; certain people have skills that they can put forward in a group - you might have someone who is happy to be carried along, but will receive the same mark, and you can't have the tutor there watching every meeting that peer assessment helps to stop them getting the same mark
H	It wasn't easy though. I think it was meant to be anonymous but everyone knew what you had put which was really hard because you form your relationships because it is the first year and then you say 'well you don't really deserve this mark' so that can ruffle a few feathers because I know a member of our team got a bit upset.
V	Ruffle a few feathers - but would your rather have less marks though if you think you deserve 20% more?
H	No I'm just saying on the relationship side of your group it changes the dynamics
V	Do you think this will kick them in the arse and say 'look you're just not trying'?

	Focus Group Sample transcript from which the survey categories were developed
I	well the problem we had in the 1st was a team member that just couldn't do anything and even as much as I tried and would sit and go through and try and explain things and I would spend quite a lot of time, because I used to be paired up with them, I would end up doing the work for them
V	Yes I ended up teaching the group everything they needed to do and then sending them away to do it because three of them had no clue at all. It was a disaster. I used to think peer marking was really important, but you're not going to be afforded that in a business are you? (others concur) It's fair enough as far as uni is concerned, because your grades are quite important, but when you go into a business it won't be as important - you're not being marked on your work are you? You can always take more of the credit unofficially, not 100% of the mark, but you can get the credit where it's deserved
H	You're certainly not going to get a choice of team
B	That's one thing that I think is a bit bad; you tend to go for groups you feel comfortable with and work well. I know we all do it, and we do it because we know we are going to get marks, but sometimes we should almost be forced into working in different groups because we don't....
H	We were in the first year.
A	Yes [tutor2] did it in CTB
H	I liked the way that was done because you don't know peoples' abilities or attitudes, but in the 2nd year I knew who I wasn't going to work with.
B	But you wouldn't get that option if it was a real world situation, you'd be forced to work with ??
V	You'd hope that the people we'd found out that we couldn't work with wouldn't be able to get a job in the companies we are going for (general laughter)

9.9 Appendix I Recruitment Letter

The letter was checked by a Communications lecturer and a small group of placement students after which it was sent to 400 placement students.

Would you like an opportunity to gain experience and earn money in your final year?

I am looking for confident, outgoing final year students who would like to improve their leadership skills by supporting a group of 4 level-4 students in semester 1 starting October 2008. The level-4 students will be working on the Information Systems Module in the first year of the degree.

This opportunity is aimed at students who aim to take management and leadership roles at some point in their career or may be interested in an academic career and would like some experience in research.

What you will gain:
I will offer support for the student leaders, training and discussion of team skills and leadership as well as paying you a minimum of £100. You will also have additional skills to add to your CV to differentiate you from other applicants for graduate jobs.

What you will be expected to do:
In return I will ask you to run 10 meetings during semester 1 to support the level 4 students in their project work; keep a research diary detailing the experience of running the group and take part in a final interview with me, again to find out what your experience has been like.

It is essential that you have successfully completed an introductory systems analysis course (IS or BSA level-4 for example) and would be desirable if you have experience of data modelling and entity relationship diagramming at level 5. Experience in project management is also desirable.

There are a limited number of places available but if you are interested please contact me giving a brief introduction to yourself; where you are doing your placement; your tutor group and the modules that you have studied that are relevant to this post.

Lynn Cinderey

SL Information Systems
Contact email address

9.10 Appendix J Co-researcher's Training Tasks

Name _____Group _____

Task grid - although I have suggested that some tasks are group and some are individual you can still choose to work as an individual on any tasks that aren't detailed as individual or group. Let me and your group, know what you would prefer. For explanations of tasks see Supplementary Notes.

Familiarisation Tasks	**suggested date**	**group**	**individual**
1. Nice to meet you - RESEARCH CAFÉ – aim is to familiarize yourself with the discussion board	April - 15 minutes		yes
2. What is team work like on your placement - add as comments in the TEAMWORK WIKI	optional		yes
3. Best and worst teamwork experience OR Teamwork Issues Video critique - add brief comments in the TEAMWORK WIKI - aim is to familiarize yourself with the WIKI tool	1 hr max		yes
Knowledge Build Tasks			
4. Agreement on communication level and type – issues of netiquette? Deciding which tasks to do as a group? Modes of communication online? Create in SMALL GROUP WIKI.	May 1hr	yes	
5. Summary of group skills resources – to be created in the SMALL GROUP WIKI. To include • definition of teams, groups, teamwork • types of team • team skills – task related and people related – project management, communication, negotiation, dealing with conflict, building team spirit etc • stages in team building – forming, norming, storming and performing • include references and citations	Time depends on how you divide it. Start any time after completing Task 4.	you decide - I think group is better	
6. Leadership issues – What type of leaders are there? What sort of leader do we need to be in a student team? What are the issues around team roles? Create in the SMALL GROUP WIKI	June Time depends on how you divide it.	you decide - I think group is better	
7. Strategy to deal with Annette's group – joint report from small group to be posted as a page in the SMALL GROUP WIKI	1hr	you decide	
8. Reflective diary template – what type of data should we attempt to capture, include ethical considerations. What sort of things have you been recording during the training? Group discussion board.	July 1hr	yes	

9. What I intend to do when I meet my 1st year group to help turn the group into a team. BLOG	August 30mins		yes

Co-researcher's Training Tasks – Supplementary Notes

Familiarisation tasks

1. Nice to meet you – Research Café discussion
2. What is team work like on your placement - add as comments in the TEAMWORK WIKI*
3. Best and worst teamwork experience OR Teamwork Issues Video critique - add as comments in the TEAMWORK WIKI

*If you're not sure what a wiki is, then have a search in the internet for information and have a look round your wiki .Have a play with the TASK WIKI and see what you can edit. (Please don't delete the tasks though ;-o)

You have all been allocated to a group – Al-Farabi, Chomsky and Martineau (see Research Teams). Within your group you have some communication tools, including a discussion area, and other groups cannot see these but I can. You also have a SMALL GROUP WIKI - one for each group Al-Farabi, Chomsky and Martineau .You can view the other SMALL GROUP WIKIS, but you cannot edit their material.

You also have your own blog. Other students cannot view the blog. During each task I'd like you to make a few entries in the private BLOG to comment on how the piece of group work went (this is just to get an idea of how the blogs work). Use your group discussion board if you want to discuss what went well in the group work and what techniques/approaches could have improved it further. For the group tasks I will ask you to appoint a different leader.

Group Task Detail

4. Agreement on communication level and type – issues of netiquette? Modes of communication online? Deciding which tasks to do as a group? Create in SMALL GROUP WIKI
5. Summary of group skills resources – create in the SMALL GROUP WIKI. To become part of the library – perhaps as a 'learning object'. To include
   - definition of teams, groups, teamwork
   - types of team
   - team skills – task related and people related – project management, communication, negotiation, dealing with conflict, building team spirit etc
   - stages in team building – forming, norming, storming and performing
   - include references and citations
6. Leadership issues – What type of leaders are there? What sort of leader do we need to be in a student team? What are the issues around team roles? Create in the SMALL GROUP WIKI.
7. Strategy to deal with Annette's group – joint report from small group in the SMALL GROUP WIKI
8. Reflective diary template – what type of data should we attempt to capture, include ethical considerations. What sort of things have you been recording during the training? Create in group discussion.

Individual – to share and discuss

9. What I intend to do when I meet my first year group to help turn the group into a team. Post in individual BLOG.

Whole group will need to be briefed as mentors. I will need to speak to Cathy Pink to arrange this. This needs to be complete by Fri 10th Oct i.e. before you are introduced to your first year teams. We will also have to work around each other's holiday commitments.

9.11 Appendix K Informed Consent

Teamwork Research

Lynn Cinderey

Senior Lecturer Information Systems

Informed Consent

Please read the notes below. If you are happy to take part in the research please sign and date at the bottom.

Aims

This piece of research aims to find out what type of knowledge is used by student team leaders when managing student teams. This will form the basis of a Doctor of Education thesis to be submitted in 2010.

Methods

A knowledge base of team and team leadership will be developed by and for final year students (level 6) who have volunteered to lead first year (level 4) groups. The L6 students have been selected on technical ability and have all successfully completed modelling and systems analysis modules. L6 students will be paid to run the team meetings. The payment is in line with that offered to student mentors participating in the Peer Assisted Learning Scheme (PAL) which runs within the University and so is in line with University norms.

L6 students will record what has happened, decisions made etc in their team meetings on a private online blog which is accessible to themselves, **the principle researcher, the supervisor and a second researcher.**

If L6 students refer to the L4 students, they will change their names, so no references to individual students will be traceable. No blog entries will be used to contribute any marks towards IS or P&C module assignments.

L6 students will be assigned to L4 teams by the Professionalism and Communication Tutors.

Anticipated benefits

Possible benefits include;
A chance for the L6 students to apply skills they have learnt in practice.
Improved employability skills for L6 students
Improved teamwork experience for L4 students
Improved teamwork leading to possible improved outcomes for system project for L4 students
Opportunity for L4 students to learn team skills/ leadership skills from L6 students
These are all benefits that could be accessed by students on an ad hoc basis through student services, the learning centre, careers and PAL but are being presented in a systematic structured manner in this piece of research.

Potential hazards of the research and any discomfort it may entail

There are no potential hazards above or beyond those encountered during any group work activity for L4 students
Preliminary research suggests that the experience for L4 and L6 students is likely to be supportive and positive along the lines of the Peer Assisted Learning Scheme within the University which provides mentors for students.
Potential participants are free to withdraw consent to participation at any time.
This applies to the L6 and L4 students participating in this research. Students are assured that any decision not to participate will not prejudice in any way their academic progress.
If problems occur during the research
First contact the principle researcher Lynn Cinderey email; Contact email address

Informed Consent

I have understood the nature of the research and agree to participate as;

A L6 team leader

Name_____ Signature _____ date _____

Or

A L4 group

Name_____ Signature _____ date _____

Name_____ Signature _____ date _____

Name_____ Signature _____ date _____

Name_____ Signature _____ date _____

Name_____ Signature _____ date _____

9.12 Appendix L Leaders Debrief

Debrief Post It Activity - all postings were voluntary - 8 leaders contributed. Leaders came together to talk and share experiences over the semester.

- Proudest Moment

18/20 we beat the other team we wanted to beat
When they achieved 16.5 for their progress check
When they got 18.5/20
When the team got 18/20
When they got 15/20 on the progress check
Team got 19/20

- I was really frustrated by the team when...

They hadn't done their logicalisation on Tuesday
People let the team down
They hadn't produced any work from the previous meeting
Didn't send minutes and agendas out via email

- What I'd do differently

Do work at the meetings
Get the team to produce an action plan/project plan - allows us to see how they are progressing with the tasks
Start meetings earlier
Learn more about facilitating this kind of project, to feel like I had more of an impact - team was exceptionally able, so my input was rarely relevant

- Worst moment

When one meeting was completely useless
Member of the team not contributing to any of the work
One member did not make an effort
One member at the beginning didn't see the point of the meetings
Not knowing what to do

- I was really impressed by the team when...

They got into the first meeting and were really determined to do well
How well the team members worked together. The time and effort they put in.
Grasping the concepts well - producing diagrams on their own etc
They motivated themselves for the first walkthrough
One particular member can very easily take control by using humour, knowledge. [The] team understand this control is necessary so [they] do as required.

This was done in tutorials w/c 26th Jan with research group and non-research group

9.13 Appendix M Research schedule – planned and actual

	Planned from ED1	Actual
February – May 2008	Recruit 10 final year students through advertisement sent to them whilst they are on placement (number is high to account for mortality/ drop out).	Recruited 13 L6 students Received ethical clearance
May-September 2008	Use forum to discuss team skills and leadership issues to develop their knowledge base.	12 students were actively collaborating on the online tasks. Additional face to face training day developed. 8 attended, 1 trained separately
October 2008	Select student groups to be offered a leader. This will be done in Professionalism and Communications module (already discussed with module leader) Focus will be on groups P and Q – both from the Computing route if two groups exist. This will equate to 8 teams. If only one group is running will use P and W (WISS has similar admission requirements). Leaders will be offered to all the teams in the tutorial group.	8 L6 leaders were assigned to teams. A 9th team formed later than the others and was allocated the reserve leader. This was done through P&C module as planned.
October – December 2008	**Data collection** final year students will run the team meetings. (approx 10, 1 hour meetings) Final year students Will keep diary after each meeting - the format of this has still to be decided, but it may well be an online blog. Some analysis of data will run parallel to data collection. This will allow for the development of an interview schedule.	69 meetings were held with blogs entries recorded.
December 2008	Collect peer evaluations from A, P, Q and W (each team gives themselves and each member a mark out of ten for contribution to the teamwork).	Peer evaluations collected as part of the assessment process.
December – Jan 2009	Interview final year students	4 team leaders selected in February. Request sent 25/2/2009. 4 Interviews held in March. 1 each week.
Jan 2009 onwards.	**Analysis** Analyse diaries looking for codes and themes. Transcribe the interviews. Analyse for codes and themes. Compare interviews and diaries to the discussion board preparation to identify skills that had been transferred and put into practice during the team meetings.	867 meaning units identified. Meaning units were read in context. A number of working documents were created including a categorical analysis spread sheet. Reading in context was eventually considered more appropriate and maps were developed for 4 leaders which maintained context and chronology My method. Respondent checking of interview transcripts in April. Coded, anonymised transcripts created in May.
	Share data with supervisors and fellow EdD researcher as part of validation process	Critical friend reported back on analysis documents supplied – January 2009
	Compare peer evaluations for 2007 and 2008.	Eventually considered too complicated to compare the peer evaluations. Other quantitative data collected included group work survey of L4 students, pre-test survey, and post-test survey. The quality of the data was variable and not the main focus of the research.
	Write up Alongside analysis – on going to 2010 as earliest date for submission	6/5/2009 first analytical structure created
		The group work survey paper written June 2009 and published for CPLA CETL February 2010
		Written work continuing through 2009 and 2010

9.14 Appendix N Induction Schedule Wed 24th Sept Room 9103

9-9.15 Arrive and coffee

9.15 am Tasks Completed - 5 -10 mins
TasksCompleted.doc (41 Kb)

Annette's Team - student group work clip
20 mins group discussion. 5 mins each group feedback (15 mins). 5 mins discussion.Total 40 mins
Feuding teams paper interesting - see tool shed - Google Scholar search

10.15 am Ethics committee
5 mins read through + 5mins for comments

Blogging sensitively
My blog - May 14th and 15th
5 mins read through. 20 mins discussion - How will you anonymise your blog, without forgetting who each reference is? What will your system be? Why do I want you to anonymise? What will you blog?Diary templatev2.doc

Looking after yourself and your students - 10 mins
Working with other students.ppt (38.5 Kb)

Informed consent
5-10 mins to fill in - remainder of the hour for any questions.

11.15 am to 2pm Transfer to Cathy's Sessions in Owen 223 and Lunch
To ensure that you look after yourself and don't infringe any university regulations we will join the PAL group for a few activities and lunch.

Level 4 student survey
In return for the structured support that is being offered in IS I ask level 4 students to complete this survey at the end of the semester. I require all level 4 participants to complete the questionnaire and it will be available on the IS Bb site. HAVE A LOOK DURING LUNCH

Pre-focus group survey
This is to get you thinking about the resources you have been using in the autonomous learning. Have a go during lunch.

2pm Focus group
Recorded but informal discussion based around the questions in the pre-focus group survey. 1 hr

Final questions including how you get paid
10 mins

9.15 Appendix O Adaptation of Bennett's Framework

Stages of development	Suggestions to move individuals to the next stage (Bennett, 1986)	Training Suggestions	When or where?
Denial	Cultural awareness activities	'inheritance tracks' as an icebreaker – perhaps posted on the teamwork Bb site; virtual pot luck buffet – post an image of a meal that is representative of your culture; post images that represent the culture you feel you are immersed in at the moment that represents the 'work you' and the 'home you' varying the size of the image to indicate the relative weighting of the cultures that you inhabit.	Online - posted prior to the training session
Defence	Valuing our own cultures and those of others	Techniques to increase cultural self-esteem could include discussions of what is "good" about one's own culture, accompanied by discussion of "good" things about other cultures.	During training day
Minimisation	Simulations, reports of personal experience, and other illustrations of substantial cultural differences in the interpretation of behaviour. 'Resource persons' can be useful at this stage to talk about the difference in culture.	Parson's 5 relational traits + time + environment(Trompenaars, 1993) exercise as a demonstration of difference within and between countries – taking the country to equal culture would not always be appropriate and can be included in the discussion.	During training day
Acceptance	Practical application of ethno relative acceptance to intercultural communication – these need to fit with the context, in this case, Information Systems group work	L5 students work with IS groups	Ongoing
Adaptation	Generation of appropriate questions about cultural difference when analysing communication problems between for example – a mature student who is a parent, and a younger student who is not.	Opportunities for interaction will be provided during facilitated multicultural group discussion. The group will be multicultural itself.	Debrief
Integration	The major developmental work at this last stage of intercultural sensitivity is in the area of ethics	-	-

9.16 Appendix P Adapted Diary template

A weekly record of the experience of being a team leader supporting a multicultural team
Date of meeting _____

First thoughts about the meeting - take 1 minute to write whatever you want
The atmosphere in the meeting was... This week I successfully applied my skills/knowledge to... It was successful because... This week I was unsuccessful in applying my skills to...
Something/nothing* happened this week that led to a cross cultural misunderstanding. This was related to ... (ethnicity/gender/age/religion/disability/sexual orientation/other *) To try and improve the situation for all team members I decided to... * delete as applicable
I think the group is at the ..... stage in the team building cycle. To move the team on and improve the situation for all team members, I decided to...
Have any of your initial thoughts changed after reflection?

9.17 Appendix Q Application of positionality framework (Milner, 2007)

What is my racial and cultural heritage? How do I know?

My grandfather was a miner and my grandmother was in domestic service and they had lived all their life in rented accommodation. My parents both left school early and my father took an apprenticeship in the construction industry, and my mother a secretarial position with part time attendance at the local college to learn vocational skills. They quickly moved from a rented cottage which had been acquired with the help of my maternal grandfather who was an agricultural worker living in tied accommodation. My parents moved into a house with a mortgage a few miles away from the council estate where my father was raised and the cottage where my mother had lived until she married. I was therefore brought up in a working class, white family in the 1960s and 1970s with very little exposure to people from different cultures in a mining village in the East Midlands. The colliery was not the source of my parents' income as my paternal grandfather warned his sons never to go down a mine. The move meant that I attended a church school in the village but my parents expressed no religious opinions. They had married in church and my younger sister and I were christened. My parents attended church only to see us in the nativity play and other school related events. My father had an inconsistent view of gender and seems to have struggled with an old fashioned view of the male being the head of a family whilst being part of a female dominated family – but having had no sons he then treated his daughters as sons. At times however, his old fashioned views on gender would be expressed and he once labelled a younger male cousin as the head of the next generation, despite his daughters having achieved earlier and greater academic success. I developed feminist leanings due to my own sense of injustice. This influenced my educational choices which resulted in me studying for an applied science degree at a Russell group university. At this stage I had encountered only one student of a different racial or ethnic background to mine, an eleven year old deaf Vietnamese girl who I helped with reading skills whilst I was in the sixth form. I'd had a sheltered upbringing, and when I left home to go to university I continued to seek shelter from undergraduate life by becoming a Christian although at the time the choice to do this meant that I felt challenged, and a long way from my comfort zone.

Working as a residential social worker in a medium sized town in the East Midlands after graduating did not expose me to any contact with other ethnic groups, but it did introduce me to disadvantaged white children. We had one black residential social worker, who stayed only for the three months probationary period and was then asked to leave. The children in the care home had not liked him. This reflection is now very uncomfortable for me. At the time I thought that it was his personality that they objected to. I would have to acknowledge now that prejudice and discrimination are far more likely reasons for his departure. As a member of the white majority, I was lacking in awareness.

My first friendship with someone from a different ethnic group was when I started working in a research laboratory. She was of Caribbean descent and also a church goer. The friendship was only for the duration of her undergraduate placement at the laboratory, but we shared a number of social identities; female, university educated, working class and church goers, both working in a male dominated organisation. I then moved to the Production Department as a 'foreman'. I was then a young woman in charge of a shift of white, working class men of

different ages. I was motivated to apply for the job because I was told that it would never be offered to a woman. Although it paid more than my research job I was over qualified for the job, which was dirty, physically uncomfortable and socially disruptive. The main production shed had no facilities for women so I had to use facilities in the administrative buildings. There was no expression of hostility from the men and the reaction of the older men struck me as being 'quaint' in that they would modify their speech and refrain from swearing in front of me. I found working night shifts to be detrimental to my health and social well-being and returned to university after working in production for a year, to train as a science teacher.

My training and subsequent teaching was in predominantly white geographical areas, with all white colleagues and non-white pupils were in an extremely small minority. At this time I worked as a youth worker for a year in a village with a small population of travellers' children who had settled in permanent housing, but were not integrated into the village. It is now, on reflection that I see there were occasional attempts to integrate the travellers' children with other youths, but no attempt to talk about their culture. They had their own youth club, separate from the main club, emphasising their status as an out-group within the village.

Only when I moved to teach in the city did I encounter a greater number of pupils from non-white backgrounds and also pupils diagnosed with autism. However, top sets tended to be predominantly white. As a teacher at university, I now have the most diverse set of colleagues and students in terms of ethnicity and physical ability. I have some friendships with people from different ethnic groups; Asians (Ugandan, bi-racial British, Armenian, Indian and Australian) who are all highly educated and westernised which gives us a shared social identity. In spite of my erstwhile religious affiliations I have gay and lesbian friends, and I have never been swayed by fundamentalist Christian opinion. Again, the thing that links us is our graduate status.

My cultural heritage is therefore that of hard work and deferred gratification; other than a mortgage, my parents saved for any large purchases. They had strived to 'better themselves' and, for my father being a homeowner , having a well cared for car and not having to work underground were the main indicators of having done this. My racial and cultural heritage was originally that of the white working class, who conform to religious conventions but without religious conviction, which I then rebelled against by adopting, for a while, religious convictions. As a young woman I made gender based decisions for study and work which had an underlying feminist agenda. My exposure to other ethnic influences has been limited until recently. Education is valued.

In what ways do my racial and cultural backgrounds influence how I experience the world, what I emphasize in my research, and how I evaluate and interpret others and their experiences? How do I know?

I am aware of disadvantage because I don't come from the 'privileged classes'. As an adolescent and young adult I was angry that women were considered less capable, but more recently I have become aware of my own inconsistent behaviour in the way that I judge women of my own age group. I know that I have to take care that I do not collude with comments that may indicate suppressed sexist views. I am often a lone female in my work groups. I am more protective towards my female students in group situations if they are a lone minority. I am aware of minorities, having often put myself into the situation of being a gender minority at work. However I know that I have never experienced that feeling of being an

'outsider wherever I am', which I now know is the experience for some of my students. I tend towards socialism. I am sceptical of over enthusiastic descriptions. My scientific education means that I want 'facts' but my research journey has redefined what knowledge is. My loss of Christian faith was based on having lost any belief in the supernatural. This leaves me less sympathetic towards personalised 'spiritual' experiences (I believe they are experiencing something natural, not supernatural), but not necessarily unsympathetic to systems of belief, but I expect individuals to be prepared to carefully consider their beliefs.

For these reasons I felt more concern about the young women leaders than the young men in my research study. I thought about the diversity of the leaders but was mostly concerned about the British Asian woman's experience. I expected the leaders to work hard and to prepare for meetings. Only some of them did this.

How do I negotiate and balance my racial and cultural selves in society and in my research? I read a lot of contemporary fiction which has recently been dominated by Black and Muslim stories. I have talked to my Muslim students about issues from their culture that I have read about. I listen to stories from my Iranian colleague about his Grandfather, Grandmother and the Haj. However I have not been as aware of the experiences of friends of colour as I am now and I have had issues with the over emotional expression of what I had seen as over sensitivity to race issues.

How do I know? I have shown greater sympathy with my white female friend in a mixed race marriage and their daughter, than I have my Asian male friend who is the husband and father. I have been more attuned to the notion of disadvantage through gender than through racioethnicity. When assigning L6 leaders to groups I was more concerned about women being minorities in the groups, than racial minorities. I now realise that I am likely to be lacking in awareness with regard to race issues. I have been slightly more aware of language issues and adapted my method of assessment for certain assignments when the number of students whose first language was not English increased.

What do I believe about race and culture in society, and education; how do I attend to my own convictions and beliefs about race and culture in my research? Why? How do I know?

I have noticed how students of colour tend to stick together in tutorials, unless the student of colour is anglicised. I don't believe in this university that the different cultures are particularly well integrated. If integration occurs it is probably due to efforts made by the minority student rather than the white majority. I used to feel that the students should be mixed up in groups, but I experienced angry resistance from a particular tutorial group and so haven't imposed groups. I now have mixed feelings/beliefs about mixing groups anyway as I realise now that these students find their self selected groups offer them the support that might be missing institutionally.

What is the historical landscape of my racial and cultural identity and heritage?

My chosen study, applied science, has a history that is fairly short with respect to women. I've studied alongside men, most of the time. The historical landscape of science has been dominated by white, westernised, male culture. In work and study I have lived through a

period where it was the norm to have explicit pictures of women displayed even in academic settings. I don't know whether this has changed in industry.

What are and have been the contextual nuances and realities that help shape my racial and cultural ways of knowing, both past and present? How do I know?

Science education meant that the accepted way of knowing for most of my adult life was that of randomised controlled experiments. Only in the last four years have I been able to firstly see the flaws in these methods, and secondly to see the benefits to interpretive approaches. My science education did not prepare me in any way to 'reflect' and consider my role in research. I accepted and supported at that time, what I know consider to be, a 'male' way of knowing.

What racialized and cultural experiences have shaped my research decisions, practices, approaches, epistemologies, and agendas?

A strict phenomenological approach seeks to investigate rather than prove. Phenomenology, in its broadest sense rather than a Husserlian sense, is to my mind a feminine methodology. The methodologies of the dominant researchers have been white, male and US American in this area of study in recent years and are survey based, quantitative, pre-coded and positivist (even when the data being collected is subjective experience) or observational and laboratory based. The researchers are not all male, but the methods are systematised rather than relationship based. I feel I have mellowed and become prepared to investigate and value the 'feminine' methods of study. That doesn't mean the methods are insubstantial – quite the opposite. Much more has been demanded of my L6 leaders as co-researchers, than is demanded of a participant who completes a survey or attends a 3 hour laboratory session. However I was very fortunate that I was working so closely with my participants that serendipitously I was saved from conducting a colour and gender blind study. I had rated confidentiality, which would protect the L4 participants from biased behaviour from me, more highly than data relating back to ethnicity and gender. Confidentiality is important, but a colour and gender blind education system probably poses a greater danger to my students, than my own personal idiosyncrasies ever would. The phenomenological nature of the research also allows for issues around race and gender to emerge in a way that the positivist style of questioning could not. Survey style research is particularly problematic when dealing with such taboo issues. Phenomenological research looks at what is salient to the participants, survey methods, which may still collect subjective data, deal with what is salient to the researcher. Dealing with responses to questions about taboo issues, such as prejudice and discrimination within a survey, needs very careful consideration.

Researching the self in relationship to others[26]

What are the cultural and racial heritage and the historical landscape of the participants in the study? How do I know?

[26] I have not been able to answer these questions in brief. These are questions which are part of my analysis. In what ways do my research participants' racial and cultural backgrounds influence how they experience the world? How do I know? What do my participants believe about race and culture in society and education, and how do they and I attend to the tensions inherent in my and their convictions and beliefs about race and culture in the research process? Why? How do I know?

This section of the reflection directs me to literature that will inform me of the cultural, racial heritage of the participants. The L6 leaders who were invited for follow up interviews were in their early twenties. Tina and Yve are both female White British students. Al is a female British Asian and Nat is a male Black African who has been living in Sheffield for several years and completed his secondary and tertiary education here. The women have emerged from an education system that has seen the success of girls improving and over taking that of boys. In addition all four have higher relative initial participation rates in higher education based on ethnic group than male White British students (Modood, 2006). However what all the L6 leaders who were selected for the final interview have in common is that they are minorities in the computing discipline in the UK. They all have to work harder within the system.

The literature selected includes published studies relating to US college students, within the college setting and in unmediated settings and internal studies of SHU students. The US literature suggests that men and women of colour are more aware of racial tensions than their white counterparts in higher education settings (Ancis, Sedlacek, & Mohr, 2000). This 'awareness' was not something that was evident in the blogs or interviews with respect to race or gender in my study. Race appears to be important in online environments and comments (positive, negative and neutral) about race are expressed in unmediated environments (Tynes, Reynolds, & Greenfield, 2004) when no one would appear to be judging. In the UK Gillborn examines the relevance of critical race theory in the UK (2006) and Lall & Gillborn report on problems with culture blind approaches in primary schools how these problems are being addressed (2004). However an internal report for Sheffield Hallam University concludes that most (but not all) ethnic minority students did not perceive race as a major issue of their lives when a sample of 14 students were interviewed by white, female student union officers (Consultation with Black and Ethnic Minority Students, 2003). A later report suggested that issues of culture had arisen for British Asian students (Dhimar & Ashworth, 2004).

The interviews in my study suggest that the L6 leaders are to some extent colour blind. This may reflect their experience in education prior to university and this issue is examined in greater detail in Chapter 5.

How do I negotiate and balance my own interests and research agendas with those of my research participants, which may be inconsistent with or diverge from mine? How do I know?

My research was seeking to discover not to prove. My methodology allowed the L6 leaders to record what was salient to them. The diary templates provided enabled them to consider what had been successful and unsuccessful in meetings and how they would prepare for their next meeting, but did not suggest the content, or what might be considered successful. The interview prompts included questions about conflict after the blogs revealed that it was happening. A range of reasons for conflict were included in these prompts which allowed for divergence.

My original interest was how the L6 leaders used knowledge; however the focus changed when the analysis started.

What are and have been some social, political, historical, and contextual nuances and realities that have shaped my research participants' racial and cultural ways or systems of

knowing, both past and present? How consistent and inconsistent are these realities with mine? How do I know?

These nuances relate to issues like feminism which is widely reported as being rejected by today's young women. The women in the study were assertive, as we might expect as they volunteered to take part as L6 leaders. For the British Asians in the study events linked to war and terrorism, will have affected their experience in British society however there was no suggestion that there were problems relating to these issues.

These realities will be very different from my own. In terms of media my main cultural influence is the radio – BBC radio 4, the students' main cultural influence is the internet (particularly Web 2.0). This will influence the systems of knowing considerably. Mine is based on heavily filtered knowledge and experience which is broadcast; theirs will include unfiltered knowledge and experience from social networking sites, commercial websites and unfiltered, unedited broadcasts from websites as well as mainstream television.

Engaged reflection and representation

The following quote from Milner demonstrates what is meant by engaged reflection and representation;

'In cases of disagreement as to the interpretation of what is occurring in a research study, researchers' and participants' narratives are both presented as point and counterpoint or narrative and counter-narrative. Such an approach, where narrative and counter-narrative are both represented in the findings of a study, can actually add a layer of evidence to complement what is known. The point is that researchers and participants in a study may interpret an experience or an interaction in very different ways, depending on the life worlds, phenomenologically speaking, of those conducting and involved in the research.' (Milner, 2007, p. 396)

Owing to my chosen methodology, my study presents the students' narrative as data. However I did want to consider the idea of the 'warm demander' as described by (Milner, 2007, p. 396) in the following section.

> 'Irvine and Fraser (1998) described an interaction between a student and teacher by borrowing James Vasquez's notion of "warm demanders" to refer to teachers of color "who provide a tough-minded, no-nonsense, structured, and disciplined classroom environment for kids whom society has psychologically and physically abandoned" (Irvine & Fraser, 1998, p. 56):
>
> *'"That's enough of your nonsense, Darius. Your story does not make sense. I told you time and time again that you must stick to the theme I gave you. Now sit down." Darius, a first grader trying desperately to tell his story, proceeds slowly to his seat with his head hanging low. (p. 56; quoting Irene Washington, an African American teacher of 23 years)'*
>
> A researcher and a participant in a research study may interpret the classroom situation above very differently. A researcher observing the interaction between Irene Washington and Darius might interpret or conceptualize the interaction something to this effect:
>
> *'The teacher is horribly mean to and uncaring about the student. She does not demonstrate care for the students because she yells at Darius, the student, and makes him feel as if his story is not good enough. Moreover, she silences Darius, and he is not able to share his story. Teachers*

similar to Irene Washington need to be educated to honor the voice and perspectives of students regardless of what the students produce.'

In short, the researcher might criticize upon the teacher's approach and believe that the teacher has it all wrong in terms of educating Darius and possibly his classmates. If the teacher were interviewed, however, she might insist:

'Because I care deeply for all my students, I understand quite well the necessity to help Darius learn. I must help Darius understand how to develop his theme to help him succeed in the classroom. I understand that what happens in my classroom has great consequences for what may happen to Darius outside the classroom. If Darius does not learn, he may end up in obliteration (drug abuse, prison, or even death). I want to prepare Darius to be successful because I believe education will be his ticket to success.'

Obviously, the hypothetical researcher and teacher conceive and interpret the classroom situation differently. Engaged reflection and representation suggest that it is the researcher's responsibility to listen to the voices and perspectives of those under study (in this case, for the teacher to talk through a researcher's observation) to provide compelling, fair evidence. In situations where the researcher and participant disagree, it is critical for the researcher to report both the narrative (in this case, the researcher's interpretation of a classroom interaction) and the counter-narrative (the teacher's explanation) or vice versa.' (Milner, 2007, p. 396)

My reflection on this concerns Nat and Al. For Nat and Al, a difference in culture will affect my interpretation of their actions. Were they both 'warm demanders'? Yve may also have demonstrated this tendency when she got angry with her group. How could I determine this?

Milner states that both voices should therefore be represented in the presentation of the data. This I have done for all four of the leaders by presenting the quotes from them in their blogs and in interview. What I could do in addition is to show them my interpretation and to then present their views alongside. The benefits are that it would present another layer of evidence. The difficulty might be that they feel defensive. The issues are difficult, as much for Yve as Al. It may also be difficult the get them to engage at this distance from the research as they have moved on emotionally and physically having completed their final year. It was difficult to get them to consider the transcripts and to sign them off as being representative. Yve was more careful with that step. They are not physically available now that they have jobs. Telephone interviews may be possible. In conclusion I feel the interviews do allow the L6 students to present their opinions/experience of what was happening in the groups. I am not reinterpreting 'what happened', but I am trying to explain. I am using other research to take the place of a 'reply' from the L6 leaders, but will consider, whenever a statement from a leader appears harsh or demanding of the L4 students, whether that might be in the context of caring what happens to them (warm demanders). When the analysis is closer to completion, I will consider the viability of trying to contact the L6 students.

Shifting from self to system

What is the contextual nature of race, racism, and culture in this study? In other words, what do race, racism, and culture mean in the community under study and in the broader community? How do I know?

It is something that is hidden from tutors. Out and out racism is rare, but choices made by students' shows that it is still an issue. Students chose to work in groups of others who are similar.

What is known socially, institutionally, and historically about the community and people under study? In other words, what does the research literature reveal about the community and people under study? And in particular, what do people from the indigenous racial and cultural group write about the community and people under study? Why? How do I know?

The community under study are members of the NetGeneration. They are far more immersed in the culture of, for example, chat rooms than I (Evans, Garcia, Garcia, & Baron, 2003). They are the computing undergraduate community and are predominantly young white British men who are able-bodied. The community is becoming more diverse. It is possible that this could cause more tension (Chang, 2002).

The white majority are less aware of racial tension (Ancis, Sedlacek, & Mohr, 2000) and van Dijk (1992) gives examples of discourses where systematic racism occurs. Although what is written is quite depressing it does mean that I have to be aware of the level of denial with regard to racism. I need to be aware also that I may be a product of the prevailing cultural hegemony.

What systemic and organizational barriers and structures shape the community and people's experiences, locally and more broadly? How do I know?

Widening participation may bring in more diverse students, but they may not have the ability to ask for help. They may not be able to socialise as comfortably. They may not be able to access the support they need. Unless they have been assessed as having a 'learning need' they will not be allocated systematic help. How many lower class students are getting the help they need? How many overseas students are getting the help they need?

Staff members from international student support don't meet with personal tutors – the systems do not allow for the easy identification of personal tutors for student support to contact them directly. The organisation has a culture of sending global emails. The system is better developed for students with learning contracts. Induction week saves money by getting the largest number of students together for talks from Student Support, IT etc. So there isn't an engagement between students, personal tutors and support staff. As a personal tutor I know that the system does not promote this engagement in my section of the Faculty.

The heavy weight information system for getting hold of student details is only available to certain staff. Timetabling is not responsive to requests to ensure that a lone woman is not placed in a tutor group, or other lone minorities – allocation is random and done by an administrative worker who is not connected to the pastoral support team of administrators and academics. Personal tutors may not be timetabled to teach the students and so the value of seeing them interact is lost.

'Shifting from the self to the system allows researchers to work through the danger of rejecting the permanence and pervasiveness of race and racism because they, individually, do not see themselves as racists or contributors to injustice, inequity, or oppression.' (Milner, 2007, p. 397)

Moving the focus from self to system is a very important part of the reflection which examines a system which is created by those in power to reflect their priorities, which have in the recent past been those of economic convenience and efficiency; of creating large lecture groups; saving on print budgets; splitting tutor groups and assigning them to others. This will continue until there is convergence in interest (Milner, 2007, p. 390) between those in power and students' needs – which may in this case be the publication of the National Student Satisfaction Survey which covers all UK universities. However as the economic situation becomes more restrictive there is likely to be an even greater emphasis on efficiency and a marginalising of equal opportunities.